for an estimated number of about 300 persons. The site upon which the buildings have been erected was until recently occupied by Messrs. Maudslay, Son, & Field, engineers, where they were in the habit of fitting up their boilers and engines. This portion of Messrs. Maudslay's works has now been transferred to new premises at Greenwich.

Mr. Sinclair is the architect of these new industrial dwellings; and Mr. T. Hodgkins is Mr. Hobbs's clerk of works.

WASHABLE LIME COLOUR.

A washable lime colour is still a desideratum; but a compound appears to have been invented, which is said to possess that property. It is stated by the *Polytechnische Notizblatt*, that if a powder consisting of three parts of flint, three parts of marble and sandstone, and two parts of burned china clay is mixed with two parts of freshly-slaked and still warm lime, a mass for coating walls is obtained which, by frequent watering, is changed into a silicate of a stone-like yet porous texture. The four ingredients well mixed together are said to supply a grounding which may be added to any colour usable with lime. The mass is thickly applied and then left to dry until the next day, when water is poured over it at frequent intervals, by which proceeding the coating becomes weatherproof. This coating may be washed without giving off any colour. In fact, the more water is used, the firmer the mass becomes, so that it may even be brushed; whilst in warm weather, owing to its porosity, it is quite soft. The mass may be used both for the most coarse and the finest painting. With it a so-called fresco layer may be produced in the dry way.

CONCRETE WATER-PIPES.

In a late number of the *Annales des Ponts et Chaussées*, a cheap method of making water-pipes of small diameter is described. The pipes were formed of concrete in the trench itself. The mould into which the concrete was stamped in was of sheet-iron, and had a length of about two yards. The several pipes were not specially joined to each other, the joints being simply set with mortar. The concrete consisted of three parts of slow-setting cement and three parts of river sand, mixed with five parts of limestone *débris*. The inner diameter of the pipes was 9 in.; their thickness, 3 in. The average fall is given at 1 : 500; the lowest speed of the current at 1 ft. 9 in. per second. To facilitate the cleaning of the pipes, manholes are constructed every 100 yards or so, the sides of which are also made of concrete. The trenches are about 5 ft. deep. The work was done by four men, who laid down nearly 200 ft. of pipes in a working day; the cost was about 3s. 9d. per yard run. It is claimed as an advantage for the new method that the pipes adhere closely to the inevitable inequalities of the trench, and thus lie firmly on the ground. The works were carried out by M. Thanneur for the water-mains of the town of Coulommiers. It may here also be mentioned that in the course of the Canal du Verdon, which supplies the town of Aix-en-Provence and the neighbourhood with water, several mains were carried in a similar manner. But the concrete pipes which are submitted to great pressure have not proved effective. The method, consequently, is only suitable for pipes in which there is no pressure, or only a very trifling one.

THE NEW YORK ELEVATED RAILWAY.

In the second volume of the great work of Messrs. Lavoinne & Partzen, entitled "Les Chemins de Fer en Amérique," much attention is devoted to the elevated railways of New York. There are altogether four lines of this description, having a total length of nearly thirty-two miles. The rolling stock consists of 203 locomotives and 612 carriages. The trains consist of from two to four carriages, and the average speed is from twelve and a half to fourteen miles. The intervals between the trains vary from one and a half to five minutes, according to the time of day. Between twelve o'clock midnight and half-past five in the morning, they only run at intervals of fifteen minutes. The average time of stoppage at each station is only from fifteen to thirty seconds. The carriages are all of one class, and the fare is the same for all distances. It is about 5d., except for the early trains from half-past five to half-past eight in the morning, and from half-past four to half-past seven in the evening, when the price is only half. The cost of these lines averaged about 200,000*l.* per mile, but in spite of this comparatively moderate outlay, and the enormous number of passengers carried, the financial results have not proved very satisfactory.

THE WEEHAWKEN TUNNEL.

The boring of the tunnel under the Hudson River at Weehawken, New Jersey, opposite New York, has now been completed, but it will probably be six months before the tunnel and its approaches will be ready for traffic. The eastern entrance has been cut through solid rock for 150 ft. The breadth is 56 ft., while the tunnel itself, which is 4,000 ft. long, is 27 ft. broad and 21 ft. high. Most of the boring has been done since January, 1882. The estimated cost of the tunnel was a million and a quarter dollars, but the actual cost will, it is expected, prove considerably higher. It was only possible to make such rapid progress by sinking shafts and working in both directions from each of these. The number of shafts was five, and upon the five sections of the tunnel seventy borers, driven by compressed air, have been kept constantly at work. The shafts are to be employed hereafter for the purpose of ventilating the tunnel. A steam shovel, which was recently invented, has done good service in helping to load the trollies and remove the rubbish.

THE DOME OF ST. PAUL'S.

Sir,—Are your correspondents on this subject architects? If so, they have taken very little trouble to make themselves acquainted with the facts of the case.

There is a famous engraving by Emmett, which was executed under the eye of Sir Christopher, in which there is proof positive that the great architect did not set much store on "the smooth uninterrupted hemisphere of the dome." The dome, as it was carried out by Wren, was honey-combed with panels divided by main styles or ribs into compartments. This panelled surface was faced up to receive Thornhill's work. Thornhill was a coadjutor of Wren's, and Thornhill's designs must have been approved by Sir Christopher. The only decorations originally suggested for the dome were arabesques on the dividing ribs of the panelling. I very much doubt whether any but the horizontal sections of the dome are spherical curves; on this point my memory does not serve me. Moreover, if the main portion of the dome be a section of a hemisphere, its hemisphericity is signally interrupted by the great opening in its centre, from which the crown of the dome takes a second and elliptical curve.

Correggio is regarded by those painters who have made mural painting a study as a decorative artist of the decadence.

A Painter.

GARLANDS ASYLUM, CARLISLE.

Sir,—I observe a paragraph with the above heading in your issue of Feb. 3, with a description of certain large additions which have recently been completed under the direction of Mr. Cory, architect and county surveyor, Carlisle, and stating that "the plans, from the beginning of the asylum, some twenty-five years ago, have all been prepared by Mr. Cory." Without in any way wishing to detract from the part that gentleman has had in carrying out the building, I feel it due to myself to state that the original design was prepared by myself, selected in an open competition, for which I was paid the first premium of 300*l.* This was the first asylum planned on the block system, and I received from my friend Mr. Samuel Gaskell, who was at that time the most active of the Lunacy Commissioners, valuable assistance and advice in the general disposition of the buildings so as to admit of a large future extension.

My design was illustrated in your journal of May 1, 1858, and the Lunacy Commissioners subsequently requested me to allow the plans, as illustrating a principle, to be published in their annual report.

The magistrates, unfortunately for me, reserved to themselves the right to retain the drawings and carry them out in their own way, and availing themselves of this condition, I was obliged to submit to the hardship of losing a very valuable commission which I had thought I had fairly won.

So many years have elapsed that the circumstance had quite passed from my recollection, until reminded of them by the paragraph alluded to.

Thos. Worthington.

THE CONSTRUCTION OF THEATRES.

Sir,—It is to be hoped that Mr. Tanner's excellent paper may promote discussion on a subject of professional as well as public interest, and result in a better acquaintance with the principles on which these buildings should be constructed. It must in all fairness be admitted that the designers of many of our modern theatres deserve credit for improved arrangements for both seeing and hearing, with a greater degree of comfort than formerly; but beyond this there is much to be desired. The arrangements of corridors, staircases, and the general approaches, parts of the house with which the public safety is more intimately connected, are, if not altogether neglected, designed on no fixed principles, and without reference to the purposes for which they are intended, viz., the easy removal, from the auditory to the street, of a moving throng of people, without discomfort, and as rapidly as possible. It is true that in many cases the architect is hampered with unreasonable demands; and as these portions of the house are the non-paying ones, it is fair to assume that, in the eyes of a lessee, they should be considered of secondary importance. Still, there can be no excuse offered for staircases leading one on to another, or so long and steep that, in case of panic, they would be of very doubtful service; nor for emergency-doors, with fastenings at the floor-level; nor for steps in passages; nor for awkward, ill-contrived angles; nor for gangways within the house of such narrowed dimensions that they cease to become passages at all; and yet all these defects, and many others familiar to play-goers, may be found in any theatre in London, even those of recent construction.

The high value of ground in any leading thoroughfare will probably never permit the complete isolation of buildings of this class as they should be, nor can sufficient space be allowed for surrounding the body of the house with open corridors, accessible from the different tiers, nor, perhaps, for external staircases from galleries. But there is no reason why the several approaches should not be of larger dimensions, and passages communicating with all parts of the auditory made broad and straight. There can be no better illustration of the dangers attending narrow passages than by taking an ordinary wine-bottle and pouring into it a handful of dried peas. Turn the bottle gently over, and the peas will escape by the neck, one by one. Invert the bottle suddenly, and the peas will remain jammed at the entrance to the neck. This is exactly what takes place in the case of a panic, and therefore necks at theatre-entrances should be unhesitatingly avoided.

Probably there is no one theatre in Europe that could be accepted as a model of its class, or that would meet in every respect the demands of a reasonable criticism, although many might be cited as having points of excellence. At Palermo, for instance, is a large theatre, of recent construction, that possesses nearly all the essentials, both in the auditory itself and its various approaches. Having only a note-book sketch of this building, I am unable to furnish a correct measured drawing of it, but it may suffice to state that it stands in the centre of a large piazza, and is circular in plan, both externally and internally, with porticos on the south, east, and west sides. There is a broad corridor running round the auditory, on the ground-level, and an open loggia over it, accessible from the upper tiers. At the back of the arena, which is of large dimensions, and raised about 4 ft., are two rows of *posti distinti*, corresponding in a measure with our stalls. Behind these, almost on the same level, is a tier of boxes, nineteen in number, and immediately over the boxes, is the dress-circle, four seats deep. The gallery rises behind, separated (architecturally only) by a very effective range of columns, of the

Corinthian order, of large dimensions. The construction is very simple, and the general effect is most excellent. Wall stands upon wall, and as the tiers recede, instead of overhanging, there is no necessity for any of those cumbrous pieces of engineering skill that Mr. Tanner refers to so markedly in his paper.

It is satisfactory to learn that the Metropolitan Board of Works, as constituted guardians of the public safety, have been authorised to take up the question of theatre construction. It is to be hoped that they will succeed in formulating a set of rules for the construction and arrangement of corridors and staircases, enabling the playgoer to enjoy a sense of security he has not hitherto experienced, and consequently reducing the chances of panic to a minimum.

Alex. Graham.

GAS AND VEGETATION.

Sir,—A visitor to the Electric and Gas Exhibition at the Crystal Palace cannot fail to notice the difference between the old and new styles of gas-lighting. Unfortunately, these burners, which are said to rival the electric light in economy and splendour, have, unlike this new illuminant, a most destructive effect on the trees and plants, which give the interior of the place the pleasing appearance of a winter garden. Although the exhibition has only been opened a few weeks, the foliage on the trees already presents a withered appearance, and the leaves which fall daily show the necessity of providing some better means of carrying off the products of combustion from these regenerative burners, which owe their efficiency to the large amount of air consumed. The quantity of gas used for the exhibition cannot be far short of 10,000 cubic feet per hour, which, according to Herr von Fragstein's tables, would require over 1,660,000 cubic feet of air per hour to make up for the quantity vitiated. Whether the large amount of carbonic acid evolved will have any destructive action on the ironwork remains to be seen, but its effect on the vegetation clearly shows that on one point the electric light has triumphed over its improved rival; and, as a set-off to the expense of electricity, it would be well to remember that cheapened gas-lighting means a polluted atmosphere or the additional expense of efficient ventilating arrangements.

Killingworth Hedges, C.E.

GAS FOR COOKING ABROAD.

According to the *Gesundheits-Ingenieur* there has been a practical trial of the above system made in the island of Laaland at the town of Naksko, which numbers 3,600 inhabitants. According to the statements published, the cost of gas for illuminating purposes is about 2d. per cubic mètre (about 35 cubic feet), while that used for cooking is supplied at the rate of 1½d. for the same quantity. The communications are brought free into the house, and the gas-meter is supplied at cost price. The internal fittings are put up as economically as they can be with due regard to efficiency, and can be paid for by quarterly instalments, extending over five years, interest being calculated at the rate of 4 per cent. The gas consumed is paid for monthly, but no charge is made for the quantity consumed for cooking during the month immediately following the putting up of the cooking apparatus. One gas jet in the room with the cooking appliance is supplied with gas at the reduced scale of charge. It is said that the population of the little town has evinced its appreciation of the enterprising policy of the local gas company, and that the use of gas for cooking has become general. For small cooking ranges the cost of the gas is said to be from 1s. to 3s. a month. The *employés* of the gas company participate in the profits made according to a graduated scale, and therefore have a direct inducement in the development of the system.

Reports to Local Government Board.—We are glad to hear that for the convenience of members of the medical profession and others, copies of certain of the reports made to the Board by their medical inspectors will henceforth be placed on sale. Many of the reports contain matter of public value. They may be obtained from Knight & Co., 90, Fleet-street, and several other publishers.

THE NEW CHURCH OF THE ORATORY, BROMPTON.

On Saturday afternoon last a large number of the members of the Architectural Association visited this building. They were received by the architect, Mr. H. A. K. Gribble, and by him the most important features of the building were explained and pointed out. Nearly a year ago (see *Builder*, vol. xlii., p. 248) we gave some account of the building, so that it is not necessary to recapitulate more than a few points. The nave is 51 ft. wide, the sanctuary or chancel 75 ft. in length by 50 ft. wide. The semi-dome over the apse, partly in brickwork and partly in concrete, has been completed. The aisles are 30 ft. wide, and are divided up into chapels, four or five on each side of the nave. The nave is vaulted throughout in cement concrete, composed of ten parts of Portland stone chippings (broken to about a ¾-in. gauge) and two parts of Portland cement. This part of the work has now been completed, and the centering has been struck from some of the compartments. Over the crossing formed by the junction of the nave, transepts, and sanctuary will be a large dome, 51 ft. 6 in. in diameter at the springing. The height from the church floor to the main cornice at the springing of the dome will be 44 ft. 3 in. The height of the dome from the springing to the eye at the top will be about 30 ft. The height from the eye of the dome to the top of the cross surmounting the lantern will be about 38 ft. This dome will be almost entirely of concrete, and will be 2 ft. in thickness at the haunches, gradually diminishing to 1 ft. in thickness at the eye, which will be formed of stone. The lantern which will rise over the eye will be of stone, and is calculated to weigh about 56 tons. The lower portion of this great dome is in brickwork, which has now been carried up nearly to the level for the commencement of the concrete work. Externally this dome will be protected from the weather by an outer dome of timber framing, covered, in the first instance, by zinc. A great deal remains to be done before the church can be ready for opening. It was desired to open it in May next, but we understand that the opening ceremony will probably be deferred until May, 1884. The completion of the western front, including the two flanking towers, appears to be for the present abandoned.

Mr. Joseph Seed is the clerk of works, and the contractor is Mr. George Shaw, of Westminster, whose representative on the building is Mr. Tinckam.

PROPOSED ARTISANS' DWELLINGS AND PUBLIC BATHS IN ST. BOTOLPH'S PARISH, BISHOPSGATE.

The Vestry of the parish of St. Botolph Without, Bishopsgate, are taking steps for the erection of artisans' dwellings and public baths within the parish. At a meeting of the Vestry held last week, the Rev. William Rogers, the rector, presiding, the question was under consideration, when Mr. Teetgen, who reminded the meeting that the unsatisfactory state of the dwellings in the parish had often been brought before the public, moved a resolution to the effect that it was desirable that a portion of the charitable funds belonging to the parish, and producing about 2,600*l*. per annum, should be applied to the provision in the parish of good and wholesome dwellings, baths, and recreation rooms for the poorer classes, in the place of the tenements which they now occupy. He observed that they had in the parish a whole neighbourhood of buildings in such a disgraceful condition, and so fearfully overcrowded that any diversion of the parish income in that direction would be of inestimable benefit to the parish. The trustees had resolved recently that in all future dealings with the moneys left for the benefit of the poor the sums should be applied where deemed desirable, for the erection of artisans' dwellings in the parish. The scheme, which emanated from the rector, included baths, wash-houses, and other conveniences for the poor. It was incidentally stated during the discussion that the leases of estates belonging to the parish which would be shortly falling in included the Eagle in the City-road. The rector, in supporting the resolution, said that they had even bought the land for the erection of almshouses and artisans' dwellings, but the railway company subsequently required it, and had shut them out. They might not be able to lay out 100,000*l*. or 200,000*l*., but they could do something towards removing the abominable state of things which at present existed. The resolution was unanimously adopted, and a committee appointed.

Well done, Mr. Rogers! Violent as the accident was that for many months crippled you, it seems never to have depressed your energy or stopped your good works.

WESTMINSTER ABBEY.

A highly interesting discovery was made on Saturday last (10th instant) during the progress of some alterations in the abbey precincts. The southern side of the main portion of Ashburnham House stands over the wall that returned in a westerly direction from the southern end of the old Dormitory (now the schoolroom). Parts of this wall may yet be seen in the archway of the "dark entry" leading to the big cloisters, and in the more modern wall of Ashburnham House itself. These, with certain massive beams that have recently come to view in that house, and in its boundary-wall and porter's lodge (recently pulled down), are remains of the ancient "Misericorde," where, amongst other uses, alms and doles were distributed to the poor. In removing certain portions of the house inhabited by the late Mr. Turle, which stands between Ashburnham House and the old Dormitory, and which includes work of Henry VIII.'s time, have been found in the wall of the "Misericorde" two Norman windows giving light, curiously enough, to an apartment or gallery upon its southern side. Along the foundations of the wall runs a subterranean passage terminated at one end by a cellar, in Dr. Bridge's house, that bears evident traces of having once served as a latrine of the monastery.

THE LATE MR. C. CHALONER OGLE, ARCHITECT.

It has been conclusively established, by the evidence taken by the Commission appointed by the British and Hellenic Governments to inquire into the circumstances of the death of Mr. Ogle, that he was murdered by the Turkish or Albanian soldiers on the 17th of March, 1878, about sunset, while proceeding alone and unarmed to Macrinitza, near Volo, in Thessaly, in order to beg the pashas to stop the bloodshed and pillage by the soldiery after the battle of Macrinitza.

The allegation that Mr. Ogle was an insurgent, and was shot with arms in his hands, is abundantly disproved, and it is shown that he had nothing in his hands but a riding-whip, and that his principal object in going to Macrinitza was to fulfil his duties as a correspondent of a newspaper.

Mr. Egerton, in a despatch from Athens to Lord Granville, dated December 18th, 1882, observes upon this point:—"To my mind, the greatest presumption of premeditation is the very falseness of the accusation made on the Turkish side against Mr. Ogle, viz., that he was killed fighting against them armed with a chassepot."

That Mr. Ogle was murdered by the Turks is clear from the evidence, and there are suggestions in the report that there was premeditation, and that some persons in authority were concerned in his death. That he had incurred the displeasure of the pashas by his remonstrances against their cruelty is probable; and the Government, if they are sincere in their desire to arrive at the truth, should not allow the inquiry to end at its present phase, but should offer a reward for the discovery of the murderers. Our relations with the Hellenic Government are of a most cordial character, and they are not likely to put any difficulties in our way, but they cannot be expected to take the initiative. Mr. Ogle was a British subject, and it is for the British Government to take the necessary steps to bring his assassins to justice.

Mr. Ogle is spoken of by every one who knew him in the highest terms. Mr. Egerton says of him:—"From what M. Tricoupi and others have told me, Mr. Ogle was a man of singular promise, and his loss is a loss beyond the immediate circle of his relatives and friends. Though he died so young [he was only 27], he has lived to do credit to the name of England here. The high spirit which he showed in following what he believed to be right, and in denouncing wrong, and his gentle humanity to the weak, will long be remembered in the land to save whose helpless ones he fell."

One of his last acts was to write a pencil note (which has been recently recovered and sent to England) to a shopkeeper at Macrinitza, to provide at his cost for some women and children whom he had rescued from the Turkish soldiery.* J. H.

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* See *Builder*, vol. for 1878, p. 436, for Biography of Ogle.

OBITUARY.

Miss Fanny Corbaux.—The death of this self-taught lady artist is announced as having occurred at Brighton, on the 1st inst. Born in 1812, Miss Corbaux at a very early age exhibited a talent for drawing, and though she was unable, through want of means, to go through a regular course of study, she struggled to make up for this deficiency by perseverance in her studies by herself, and in the year 1827 she gained a silver medal of the Society of Arts for an original portrait in miniature, as well as the Isis medal for a composition in water-colours. This medal she also gained in the following year, and in 1830 the gold medal fell to her lot. In this year she was elected an honorary member of the Society of British Artists, and a little later she became a member of the Institute of Painters in Water-Colours, at both of which galleries she frequently exhibited her works. In addition to her talents as an artist, Miss Corbaux evinced a considerable bent for Oriental studies. About ten years ago Mr. Gladstone granted Miss Corbaux a pension from the Civil List in recognition of her services to art and literature.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

427. C. Weygang, London. Manufacture of fibrous material for floor-cloth, roofing-felt, wall-covering, &c. Jan. 26, 1883.

435. A. R. Holland, London. Ventilation of apartments, &c. Jan. 26, 1883.

436. W. Lord, Middlesbrough. Preventing down-draughts in chimneys. Jan. 26, 1883.

445. P. Born, London. Folding lattice shutter. Jan. 27, 1883.

473. J. Hall, Stourbridge. Porcelain fire-clay baths. Jan. 29, 1883.

481. R. Stone, New York, U.S.A. Apparatus for hoisting stone, &c. Jan. 29, 1883.

489. J. A. B. Bennett, King's Heath, and J. Herd, and B. P. Walker, Edgbaston. Heating and cooking stoves. Jan. 30, 1883.

516. W. R. Lake, London. Apparatus for building arches or domes. (Com. by T. J. Lovegrove, Philadelphia, U.S.A.) Jan 30, 1883.

531. M. Benson, London. Drain-tiles. (Com. by J. Lynch, Washington, U.S.A.) Jan. 31, 1883.

532. M. Benson, London. Terra-cotta tiles, architectural work, &c. (Com. by J. Lynch, Washington, U.S.A.) Jan. 31, 1883.

576. D. F. W. Quayle, Castletown. Window-sashes. Feb. 2, 1883.

578. P. Gay, Paris. Machinery for sawing stone. Feb. 2, 1883.

599. S. S. Hellyer, London. Water-closets and slop-sinks. Feb. 3, 1883.

608. T. Cliffe, Huddersfield. Apparatus for removing superfluous body and glaze off enamelled bricks, &c. Feb. 5, 1883.

615. T. Webster, Edinburgh. Apparatus for closing and opening curtains. Feb. 5, 1883.

619. G. W. von Nawrocki, Berlin. Hinges for doors, &c. (Com. by O. A. Ludewig, Stettin.) Feb. 5, 1883.

637. W. White, London. Rendering existing walls damp-proof and tiles therefor. Feb. 6, 1883.

651. H. C. Symons, London. Apparatus for raising, &c., weights in water-closet levers, &c. Feb. 6, 1883.

656. W. M. Hobson, Birmingham. Arrangement of tesselated tiles, &c., to buildings. Feb. 6, 1883.

684. J. G. Stidder, London. Apparatus for supplying trapping, &c., arrangements for sanitary and sewage purposes. Feb. 7, 1883.

695. J. Hay and G. Robertson, Glasgow. Window-sashes. Feb. 8, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Jan. 30, 1883.

4,550. J. Shaw and F. Milan, Lockwood. Apparatus for indicating the presence or absence of water in cisterns, &c. Sept. 25, 1882.

Feb. 6, 1883.

4,726. W. A. Barlow, London. Door, lock, or latch checks. (Com. by F. W. Boldt and P. C. A. Vogel, Hamburg.) Oct. 4, 1882.

Feb. 9, 1883.

4,715. J. Bateman, London. Stoves and fire-places. Oct. 4, 1882.

4,727. W. A. Barlow, London. Trapping sewers and drains. (Com. by L. Henry, Brussels.) Oct. 4, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending February 3, 1883.

2,783. H. J. Haddan, London. Machinery for cutting and dressing stone. (Com. by A. McDonald, Massachusetts, U.S.A.) June 13, 1882. Price 6d.

This relates to adjusting and working the rotary disc cutters of stone-dressing machines.

2,806. S. Deards, Harlow. Securing sheets of glass, metal, &c., for roofing and other purposes. June 14, 1882. Price 6d.

The sheets of glass, &c., are held by strips of metal of an elongated x form, the edges of the sheets being held between the jaws of the x, while the strip of metal is secured to the rafter through the web joining the two sides of the x.

2,829. R. R. McKee, Kirkcaldy. Water supply and regulating apparatus for flushing-drains. June 15, 1882. Price 6d.

This consists of an automatic apparatus in a tank whereby the tank is periodically emptied into the drain.

2,850. J. H. Johnson, London. Supplying and distributing water to and in houses, &c. (Com. by A. Dumas, Paris.) June 16, 1882. Price 6d.

The service-pipes are all small ones, and a series of closed tanks are provided about the house where the water is required. (*Pro. Pro.*)

2,935. A. Clark, London. Fireproof screen for separating the stage from the auditorium of theatres, &c. June 20, 1882. Price 2d.

This consists of a double screen of iron or steel plates, the space between which is filled with water or any non-conducting substance. (*Pro. Pro.*)

2,940. T. Beddoe, London. Apparatus for supplying disinfectants to water-closets, urinals, and drains, &c. June 21, 1882. Price 2d.

The disinfectant mingles with the flushing water as it enters the basin. (*Pro. Pro.*)

Published during the week ending February 10, 1883.

2,670. C. J. T. Hanssen, Flensburg, Prussia. Plugs for connecting service-pipes to water and other mains. June 7, 1882. Price 6d.

Hollow plugs are screwed into the main, which are closed by plugs of hard sugar protected on their undersides next to the main by layers of insoluble material. When the connexion is made a little water poured in from the outside dissolves the sugar plug, and the insoluble material gives way under the pressure in the main, and the connexion is opened.

2,834. A. M. Clark, London. Water-closets, &c. (Com. by J. J. B. Frey, New York, U.S.A.) June 15, 1882. Price 8d.

The valve on the discharge-pipe is a ball of indiarubber, and round the spindle thereof is fitted a spring to keep the ball down on its seat. When the pull raises the ball the cistern valve is also opened, and a flush effected. At the same time the drip tray is also flushed through a flushing-rim formed round it. To connect the porcelain pipe of the closet with the metal pipe a screw-sleeve passes over the end of the porcelain pipe and engages an external thread on a ring passed over the end of the metal pipe, thereby bringing the two parts tight together.

2,868. J. Thomas, Bangor. Apparatus for cutting and shaping stone. June 17, 1882. Price 6d.

This consists of an apparatus wherein the block is placed on an anvil, and a succession of blows are struck on it in the required place by a series of hammers driven by machinery.

2,926. A. K. Robinson, Leeds. Cooking ranges and stoves. June 20, 1882. Price 6d.

A bonnet is fitted to closed fire-ranges to pass the steam and gases direct to the chimney.

2,986. J. McDougall, Glasgow. Apparatus for regulating the supply of water to water-closets. June 23, 1882. Price 2d.

The handle actuates two valves, one at each end of a long-closed tank, by one of which water is admitted to the tank, and by the other is passed to the closet. (*Pro. Pro.*)

2,994. R. Jackson & S. Jackson, Broad-bottom. Ash-receiver. June 24, 1882. Price 2d.

A metal box is fitted below a grating beneath the fire-place into which the ashes fall, while the cinders are arrested by the grating. (*Pro. Pro.*)

3,009. W. S. Morton, Edinburgh. Fireplaces. June 26, 1882. Price 6d.

Receptacles for fuel are formed in the hobs or sides of the fireplace.

3,028. J. W. Cook, London. Forming temporary partitions in class-rooms, &c. June 27, 1882. Price 2d.

Flaps are hinged to the backs of the forms which, when turned up, form the partitions. (*Pro. Pro.*)

5,165. A. M. Clark, London. Gas cooking stoves and ranges. (Com. by W. W. Goodwin, Philadelphia, U.S.A.) Oct. 30, 1882. Price 4d.

A flue is so arranged above the burner that while no heat is abstracted all the noxious products of combustion are carried off to the chimney.

AN ARCHITECT'S CLAIM.

HESKETH *v.* ROLLWAGEN.

This case, tried at the Liverpool Assizes on Saturday last, before Mr. Justice Kay and a special jury, was a somewhat singular one. The plaintiff, Mr. William Hesketh, architect, Liverpool, sought to recover from the defendant, a waiter at the Alexandra Hotel, Dale-street, money due as commission for professional work done. The defence was that the work had not been carried out according to the instructions given. Mr. Russell, Q.C., M.P., and Mr. Carver were for the plaintiff, and Mr. Gully, Q.C., and Mr. Stewart for the defendant.

Mr. Russell said the action was brought to recover between 200*l.* and 300*l.* for work done by the plaintiff in the capacity of an architect. The defendant became interested with a man named Copestake about July last, in some land at Heswell, which is midway between West Kirby and Parkgate, and upon this property they contemplated the erection of an hotel. The plaintiff was applied to by Copestake, who took him to the defendant, and it was explained that, as there was no hotel in the neighbourhood of Heswell, it might be a good speculation to build one. It was necessary to at first procure a licence, the magistrates by a recent Act having power to grant a conditional licence on plans being submitted to them. It appeared, however, that there was a rival aspirant for hotel-keeping in the village, a man named Bainbridge having purchased some house property, which he proposed to alter so as to adapt it to the business of an hotel. The defendant, being of opinion that this would not satisfy the magistrates, instructed the plaintiff to prepare his plans, the commission agreed on being 2½ per cent. on the cost of the building if the plans were not carried out, and 5 per cent. if they were. The application for a provisional licence came before the magistrates on the 31st August, but as the plans did not show stabling accommodation the consideration of the subject was postponed till the following licensing sessions. The plaintiff was thereupon instructed to provide the plans, and did so. He also prepared an estimate of the cost of the building, putting it down at from 8,000*l.* to 10,000*l.*, the stabling being for about sixty horses. The plans were again submitted on the 28th September, and the provisional licence was granted, and confirmed on the 7th October. The defendant then instructed the plaintiff to have the plans, tracings, and specifications completed by the 16th November, but between that date and the end of the month the defendant seemed to have changed his mind, and affected to be surprised at the plaintiff's estimate of the cost of a new hotel, and refused to pay a penny for all his labours. The plaintiff stated that no limit was given as to the cost of the hotel, the defendant on the other hand saying that a few thousands were not material, he having friends to help him; and Mr. Bainbridge deposed to the defendant paying him 150*l.* to buy off his opposition to the erection of the hotel as designed by the plaintiff, in respect to certain restrictions on land required for the scheme.

The defence was that the plans exceeded in cost the instructions given, and that the plaintiff was expressly informed of the extent to which the defendant would go, namely, about 3,000*l.*

The jury awarded the plaintiff 200*l.*

PAYMENT FOR MEASURING VARIATIONS IN CONSTRUCTION.

Sir,—Regarding the question of your correspondent, "A. Z.," in your last issue, may I be allowed to state an opinion as to the custom which, in ordinary cases, I believe would be applied, as being the reasonable thing, by those architects and surveyors of good standing who practise in the leading centres, and possibly elsewhere, in dealing with variations of addition and omission, during the construction of a building, arising out of the from time to time modified views of the proprietor or architect; and, I am bound to say, generally occurring at the instance of the former, whose mind would seem to have become curiously clearer in regard to his wants during the progress of erection than at the time of signing the contract.

In these remarks I allude to any building erected for a stated sum, for which quantities may or may not have been originally supplied, the contractor having performed his part honourably and thoroughly to the end, and having only obtained fair remuneration for his work.

Assuming, then, that no special clause had been inserted in the signed conditions of contract binding the contractor to pay the whole or part of the measuring charges, he would not, or should not, be called upon to pay the same out of his own pocket; and because he is assumed to have made no provision for it in his estimate, for unless clearly so stated in the conditions he could have no object in increasing the estimate (especially in these days of close competition) by *making an unasked-for provision*; but if, on the other hand, a clause should exist in the conditions binding him to pay them, he would be called upon to do so, and this without any hardship, for he had made provision for them in his estimate, or if not, that would be his own matter.

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* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

In result, it should make no difference to the proprietor whether he or the contractor agrees to pay the measuring charges, and for the reason that, if contractor pays, they are generally added into the certified amount the proprietor has to pay at settlement; and if he pays them direct out of his own pocket they are, of course, not so added.

Of course there are exceptional cases constantly cropping up to which ordinary custom could not be justly applied, as, for instance, where one side seeks to gain an undue advantage over the other, or all may be tinged with the same hue; and in such cases a very decided opinion, based upon the ordinary custom, and given without being conversant with the whole history of a structure from beginning to end, might prove to be misleading, — altogether unjust to the fair interests of all concerned. N.

DAMP AND POROUS WALLS.

Sir,—I note your correspondent, "House Agent," [p. 160, *ante*] writing from Bristol, a neighbourhood suffering in a very large degree from the recent floods, wants to know if there is any cheap method of rendering walls impervious to wet.

As "House Agent" very pertinently remarks, this is a very serious matter, and no one, save doctors, has any conception of the amount of illness and death brought about by people inhabiting damp houses. I am glad to be in a position to point out to your correspondent a cheap and absolutely effective remedy, viz., the Hygeian-Rock Building Composition, of which I am patentee, and if he will put himself in communication with me, I shall be glad to give him particulars of cost, &c.

My composition has now been before the public for twelve months, during which time it has been extensively used and put to some very severe tests, and has given universal satisfaction. Any walls built upon my system, and with the aid of my composition, I will guarantee to be absolutely impervious to wet or damp of any description, no matter how thin the walls, how porous the bricks, or how bad the mortar; and this can be accomplished without any additional cost, inasmuch as the composition imparts so much additional strength to the walls, that a reduction in their thickness can be made, equivalent in cost to that of the composition.

I have also perfected a system for applying my composition to existing damp or wet walls, the *modus operandi* being as follows:—In the first place the plaster is removed from the face of the wall, and the joints well raked out; then a cavity for the reception of the composition is formed by means of a specially made "locked tile," which is vertically fixed against the wall by means of a temporary cramp, behind which the composition is poured in a hot liquid state, and when cooled and set, which takes place in about five minutes, fixes the tiles, and forms an absolutely impervious lining to the walls, with a honeycombed undercut surface upon which a render of plaster or mastic cement can be placed, and the wall be prepared for decoration within six days from the time of taking off the old plaster; and in this manner any wall, however wet, can be made permanently dry by the introduction of a vertical impervious lining, not exceeding seven-eighths of an inch in thickness, which can be applied either internally or externally.

William White.

No. 3, Westminster-chambers, S.W.

LAMBETH PALACE.

Sir,—As in your notice of Mr. Cave-Brown's most valuable work on Lambeth Palace you have been good enough to refer in terms of praise to the Society for Photographing Relics of Old London, you may, perhaps, allow me to mention that the Society are now preparing to issue, as a part of this year's series, three views of portions of the Palace, —the gatehouse, the exterior of the hall or library, and the so-called Lollards' Tower.

Alfred Marks.

DAMP HOUSES AT BRISTOL.

Sir,—If your correspondent "House Agent" chooses to inquire, I think he may, in his own city, come across a manufacturing firm who can supply an article that may possibly partly serve, if not entirely, his purpose. I allude to the firm of Messrs. A. T. Morse & Co., Perry-road, St. Michael's, Bristol, makers of the Patent Calcarum Washable, Damp, and Heat Proof, Water Colours. If not, I must refer him to numerous silicate paint manufacturers, both in London and the provinces. It is a pity that the Local Authority, or its officers, does not interfere to prevent such nests of disease continuing to exist, much less to be erected, very often with little or no concrete footings, or asphalte, or other suitable damp-proof course, so frequently occurring nowadays. Camden Town.

CAUTION.

There is a man just now calling upon architects stating that his father had done business with them, and soliciting money, sometimes as a gift, at others as a loan. He gives the name of Smith, and his head is utterly without hair. The sums he has received range from 2s. 6d. to two guineas.

BANKRUPTCY LAW.

Sir,—As it is probable an alteration will be made during the next session of Parliament in the existing scandalous condition of the law on bankruptcy, it is to be hoped it will be done thoroughly, and not leave so many loop-holes for dishonest traders. Out of the 9,700 cases of insolvency last year, 3,500 were compositions; 54 per cent. of these paid under 6d. in the pound, and 82 per cent. under 5s. in the pound. The number of cases are on the increase, and the amounts paid are diminishing. Where one man comes to grief through misfortune 100 come to the same end by dishonesty. No wonder one of our judges lately stated sarcastically he was surprised that as long as the law stood in its present unsatisfactory state any man who studied the interests of his family should think of paying 20s. in the pound. Leniency should be shown to any man who can clearly show he cannot meet his demands through misfortune, but severity should be shown to rogues. It is quite a common practice nowadays for unprincipled scoundrels to submit estimates for work at ruinous prices, never intending to pay for the material; and they also divide their work out to other masters, and cheat them openly under the protection of the law. I know of many cases in my own experience where work has actually been taken below the honest price of the material. Architects would do well not to encourage this system, but know something of those whom they employ, and adopt the man whose price is nearest to the surveyor's estimate. Unless some alteration is soon made the whole trading community of the country must come to grief. Robt. Pearse.

CHRIST CHURCH CATHEDRAL, DUBLIN.

Sir,—In the book which you so favourably reviewed in your wide-spread journal on the 3rd inst., on the restoration of Christ Church Cathedral, Dublin, published by Messrs. Sutton Sharpe & Co., the late Mr. G. E. Street, R.A., says:—"The risk and difficulty and consequent anxiety in undertaking such a work was very great," &c. . . . . . "and the work was done throughout, thanks to the energy and skill of the clerk of works (Mr. Doolin) and the builders (Messrs. Cockburn) without a sign of a crack or settlement." So far as the name of the clerk of works is concerned I feel extremely sorry such an error should have remained uncorrected before it came before the profession and the public, as I superintended the most important and largest portion of the restoration under the late eminent architect. I feel all the more grieved about the occurrence as I have lost during the last few weeks the appointment on some most important works to be carried out from similar misrepresentations. I hope for justice sake you will give the above correction as prominent a place in your next issue as you can give it.

Wm. Conradi, late Clerk of Works at the
Christ Church Cathedral, Dublin.

FINCHLEY SCHOOL COMPETITION.

The following is the result:—

1st Premium, "Knowledge is Power," Dunk & Geder, 36, Leadenhall-street.

2nd Premium, "R.R.R.," Chas. Bell, 9, New Broad-street.

3rd Premium, "Lux," C. E. Sayer, 17, Soho-square.

Professor T. Roger Smith acted as referee.

BUILDING DISPUTES AT THE BOW COUNTY COURT.

The Judge of the Bow County-court has just had before him two cases in which parties connected with the building trade were respectively plaintiffs and defendants.

WRONGFUL DELIVERY OF TIMBER.

In this case, Mr. Lamont, the plaintiff, is a timber merchant, residing at Leyton, and the defendant, Mr. Cotes, is a builder, at Bow, and the action was brought to recover 9*l.*, the value of timber wrongfully delivered to the defendant. It appeared from the facts of the case, as stated on behalf of the plaintiff, that he purchased the equity of redemption of certain property of William Cotes, brother of the defendant, and afterwards purchased for William Cotes, from Messrs. Gunton & Co., a quantity of timber of the value of 9*l.*, to be delivered to and used by him for building purposes. The defendant, who was also building close to the spot, got possession of the timber by mistake, and used it in his own buildings. On the plaintiff speaking to the defendant on the matter the latter asked him to treat him as his customer, which the plaintiff refused to do, and shortly afterwards he heard of the defendant's liquidation, of which he had no notice. He (the plaintiff) had paid for the timber.

In answer to the claim, the defendant replied that the goods were delivered to him by mistake, and he afterwards asked the plaintiff to allow him to be his debtor.

His Honour, in giving judgment, said,—"You should pay the money and end the matter. Be honest if you can, and do not shelter yourself under bankruptcy." The judge then amended the summons for "detention of property or value thereof," and gave judgment for the amount claimed, payable in a week, or formally the property to be given up.

CHARGING FOR FOREMAN'S TIME.—FRENCH *v.* GENTRY.

In this case the plaintiff is an engineer at Whitechapel, and the defendant is a builder, of the Longthorne Works, West Ham, Stratford. The action was brought to recover 14*l.* 10s. for fitting up a steam-boiler at the defendant's works at West Ham. The defendant had paid 10*l.* 11s. 6d. into court, and before the case was gone into, the solicitor who appeared on behalf of the defendant said that he objected to pay the amount charged for foreman's time in superintending the job, and the arguments in the course of the hearing of the case turned upon that point.

On the part of the plaintiff, it was stated that he paid his foreman 1s. an hour for going to the job, and allowance was made for superintendence. It was the custom of the trade.

His Honour observed that a man was allowed to charge time for going to a job, but the plaintiff could not get it in two ways.

The defendant said he employed a large number of hands, and had twenty foremen. He sent out foremen to superintend his work, but never charged for them. He had paid dozens of bills, but never before had such an item charged to him.

In answer to the judge, he said, "I live by the profits on the men's time and the materials, but I am charged twice for it in the plaintiff's bill."

The plaintiff, in reply to the judge, said that if he had had no foreman he should not have charged for his time in superintending the work.

The judge said that the charges for superintendence were not maintainable, and gave judgment for the defendant.

THE ADELPHI THEATRE.

On the 8th inst., at Bow-street Police Court, Messrs. A. and S. Gatti attended before Mr. Flowers to a summons taken out by the Metropolitan Board of Works for unlawfully making default in complying with a notice requiring them to make certain alterations necessary to remedy structural defects in the Adelphi Theatre.

Mr. Besley appeared in support of the summons, and said the proceedings were instituted under the 11th section of the Metropolis Management and Building Act Amendment Act, 1878. With reference to the facilities given to the public for egress from the theatre there was nothing to complain of, as the theatre was provided with several doors. In April last, however, Captain Shaw inspected the theatre, and, in consequence, the defendants were served with a notice to effect certain alterations included in a list of eight requirements. A proscenium wall was to be built in brick between the stage and auditorium, a portion of a house in Maiden-lane, used as a scene-shop, was to be separated from the rest of the house, and the house was to be separated from the stage by a brick wall, all openings in such wall to be closed by wrought-iron doors. The ceilings in the auditorium and other parts of the theatre were to be made fire-resisting, and hand-rails were to be fixed in different parts of the house. The gallery door was also to be made to open outwards. Formal notice to carry into effect the requirements of the Board had been served on the defendants in June last, but they had neglected to make the necessary alterations. They were consequently liable to be fined 5*l.* per night, which would make a total of 200*l.* Since these proceedings had been instituted, however, the defendants had given an assurance that the work would be proceeded with at once. It was, therefore, suggested that a fine should be imposed for two nights, making 10*l.*, and the case be adjourned for a month to see whether the requirements of the Board were completed. If they were, no further steps would be taken.

Mr. Flowers imposed a fine of 10*l.*, and granted the adjournment asked for.

STAINED GLASS.

Pendleton, near Manchester.—The Bishop of Manchester has lately unveiled the five-light east window of St. George's Church, Pendleton, near Manchester. It represents the Ascension of our Lord, and has been subscribed for by the miners of the neighbourhood. The artists are Messrs. Mayer & Co.

Galway.—A large stained-glass window has been given to the Church of St. Nicholas, Galway. It is in the east end of the church, and consists of five compartments, representing Christ as the Good Shepherd, raising of Jairus's daughter, our Lord in prayer, Christ calling little children, and Mary at the sepulchre, while the tracery contains a bust of St. Nicholas and angels. The window is by Messrs. Mayer & Co.

VARIORUM.

When the first edition of Street's "Indian and Colonial Mercantile Directory" came before us, we were impressed by the extent of ground covered, and the amount of valuable information given, and gladly expressed approval of the book. In the edition for the present year the number of towns and cities has again been increased, as well as the number of maps. As before, the leading merchants and traders of every class, likely to be of any use to manufacturers and all engaged in commerce, are fully enumerated, together with the leading professional men, and concise descriptions of each country and town are furnished, with a view more particularly to show their commercial capabilities and peculiarities.——The "City of London Directory for 1883" seems again increased in size. Amongst its chief features are: A Street List, clearly arranged. Every house, occupier, and the business carried on, is given, and the floor occupied. Alphabetical List, name, address, and business of everybody in the City of London. Livery Companies of London. Valuable information, not to be found in any other work, is given in this section concerning these ancient Guilds of the City, halls, names of the masters, wardens, officers, fees, particulars of charities, gifts, &c.; and a coloured map gives the parish and ward boundaries, and improvements to date of issue.——The new number of "Our Homes, and how to make them Healthy" speaks thus as to iron stoves:—"Iron is a very useful material for stoves. Iron lends itself readily to convenient forms, and it is a very good conductor of heat. The consequence is that iron has been more largely used than any other material for stoves. There are, however, several serious objections to iron stoves, especially for small rooms. A long flue-pipe is unsightly, and on that account often inadmissible. Iron stoves heat rapidly, and easily become red-hot, therefore the effect produced is unequal both on the air and on persons in the vicinity of the stove. An iron stove cools down with rapidity when the fire is low. The flue-pipe gives out unequal degrees of heat in the different parts of its length. With an iron stove the temperature, at 18 in. from the stove, has been found to exceed, by 27° Fahr., that observed at 6 ft. from it; and with a red-hot stove the difference in that short distance has been found to be in some cases as much as 45°. Carbonic oxide has been found in air heated by iron stoves. This can only occur provided the stove be very highly heated; but a high temperature is a liability to which many iron stoves are subject. Iron, very highly heated, may take up the oxygen from the carbonic acid prevalent in the air of an unoccupied room, and thus reduce the carbonic acid to the condition of carbonic oxide. Moreover, the quantity of dust in a room, which almost always contains organic matter, may, under these conditions of temperature, somewhat influence the presence of carbonic oxide. General Morin alleges that he found the effects to be nearly three times as great with cast-iron as with wrought-iron stoves. It has also been alleged that the carbonic oxide generated in the flue may permeate through the cast-iron of the stove, if very highly heated or if made of inferior porous metal, into the surrounding air. Carbonic oxide may also be produced by the oxygen of the air acting on the carbon in the cast-iron if heated to a red heat. The effect would be diminished by the presence of moisture in the air. Consequently, the use of vessels containing water on metal stoves has been recommended. The use of surfaces of iron heated to a red heat for warming air for ventilating purposes is objectionable. Hence, whenever iron stoves or cockles are used for heating air, care should be taken to prevent the iron from attaining a high temperature, and with this object all iron stoves should have a lining of fire-brick, so as to prevent the fire from coming in direct contact with the iron; such an arrangement prevents these incoveniences, and preserves greater regularity in the heating of the air."——Cassell's "Household Guide" for February gives useful hints on lawns. "It would be impossible to state dogmatically at what intervals a lawn should be mown, as this must much depend upon the season, the state of the weather, and the rapidity with which the grass grows. It is, however, always desirable to begin mowing before the grass has attained undue length in the spring, and during the summer to cut it as frequently as possible; a week is the extreme period during which it should be left throughout the grass-growing months, and, to keep the lawn in really fine order, it should be mown much oftener. With the machine mower the labour of going over a lawn on which the grass is short is very slight, and the roller attached to the machine will then be generally sufficient to keep down worm and ant-hills. In those cases where worms are so numerous as to become a nuisance, they may be destroyed by sprinkling the plot, through the rose of a watering-pot, with water into which, on the previous day, hot quick-lime has been thrown, in the proportion of six or eight pounds to the hogshead; it is, however, doubtful whether worms are not frequently as beneficial as hurtful by rendering the ground porous and admitting air to the roots of the grasses. Where such weeds as plantain or ribbed grass exist they should be carefully rooted out, as they will destroy all the finer grasses near them. Moss, which results from poverty of the soil, is best destroyed by enriching it with top-dressings, such as guano, soot, fine compost, lime, &c., applied early in the spring, and well brushed in. Treating the lawn in this manner, and using a collecting mower, is, in the opinion of some persons, preferable to the practice of scattering the grass; but the latter mode certainly affords nourishment to the grass."

Miscellanea.

House-Builders' Eccentricities. — The *Medical Press and Circular* speaks strongly of some of the arrangements at the much over-praised Bedford Park. The writer says, speaking of the houses:—"The arrangement of the domestic offices is frequently carried out with almost perfect neglect of all sanitary precautions. We particularly refer to the fact that the 'larder,' in which the food of the unfortunate families destined to live in the houses is placed, is invariably *next to a water-closet*, and in the majority of cases the doors opening into the two receptacles, for *ingesta* and *ejecta* respectively, are directly contiguous, while in even the best constructed only a partition wall divides the two compartments. Such a disposition cannot be at all a necessary arrangement, as the merest inspection suffices to indicate; and in a district which appears to be growing very rapidly in public favour, and to be each year more thickly populated, immediate steps ought to be taken under authority to prevent the repetition of blunders so glaringly detrimental to the preservation of health."

Huddersfield Fine Art and Industrial Exhibition, 1883. — The Council of the Huddersfield Technical School and Mechanics' Institute have decided to hold a Fine Art and Industrial Exhibition, in connexion with the opening of the new Technical School and Mechanics' Institute in June next, and a large committee has been appointed for that purpose. The new building, now nearly completed, together with a large shed for machinery, and a spacious annexe to be erected on the adjoining land, will provide ample room for a most extensive exhibition. The large shed being lighted from the roof is admirably adapted for the exhibition of engines, mechanical tools, and machinery in motion, which it is intended to make a very important and prominent feature in the exhibition. There will be a large and attractive collection of paintings, water-colour drawings, statuary, and other works of art. Applications for space must be sent in not later than the 21st of February, 1883, to Mr. Austin Keen, secretary.

The Calcutta International Exhibition, 1883.—The requisite new buildings adjoining the Imperial Museum are now being erected under the superintendence of Colonel the Hon. S. T. Trevor, Royal Engineers. Invitations have been sent throughout India to all the rajahs and princes, inviting them to contribute to the Indian display, which is to be on a very grand scale. The machinery department is expected to attract much interest.

School of Art Wood-Carving. — It is worth mentioning that in this school, held at the Royal Albert Hall, Kensington, in connexion with the Technical Institute of the City and Guilds of London, free-studentships in both the day and evening classes are at present vacant. Application should be made to the Manager of the School, Royal Albert Hall.

Owermoigne.—The parish church of Owermoigne, Dorset, has been reopened, after having been almost entirely rebuilt,—a work rendered necessary by the dilapidated and dangerous condition of the church. The walls were decayed and bulging, the roof showed signs of probable speedy collapse, the south porch was a good deal out of the perpendicular, and as for the pews, many of them had been repaired with portions of tea-chests and odd pieces of wood. By a bequest of the late Rector, supplemented by the liberality of his nephew, the present lord of the manor (Mr. Cree), funds were provided for carrying out the works. It was originally intended merely to place a new roof upon the old walls and generally renovate the church, the sum of money referred to having been left for this purpose only, but it was found the walls were in so decayed a condition as to be unsafe, and it was subsequently decided to pull down the whole of the building, with the exception of the tower, and rebuild it, Mr. Cree undertaking to bear the extra cost. The faculty for carrying out the restoration was granted to him by the Bishop, and plans of the needed alterations were designed by Mr. S. Jackson, architect, of Weymouth, and, having been approved, were entrusted to Mr. John Beer, builder, of Wareham, to carry out. The work was commenced last April. The total cost of the alteration was upwards of 1,000*l*. The original stone facing of the building has been utilised for the same purpose in the rebuilding. No variation has been made in the form of the church (except the addition of a vestry), which consisted of a nave, chancel, and transept. The style of architecture of the old church, which appeared to have been built at three different periods, was a mixture of Early English and Perpendicular. The architect in the restoration has followed the latter style. The tower arch, which was formerly closed up and hidden by a hideous gallery, has been thrown open and restored. The western window has also been carefully restored. The nave is divided from the chancel by a bold moulded arch in character with the old tower arch. The transept has a similar arch. The whole of the window and door dressings are new and of Portland stone, except the three windows on the north and south sides of the chancel, which have been restored. The east window is new, and is filled with stained glass. The centre light represents Christ, the Light of the World, that on the left St. Mary, and on the right St. John. The colours are tastefully arranged. The window is the gift of Mrs. Stone, and is in memory of members of her family. It was supplied by Messrs. Heaton, Butler, & Bayne. The interior walls above the seats are stuccoed; below they are finished with Portland cement. The roofs are open-timbered, boarded alternately with pitch-pine and red deal on the purlins and principals. The timber is all wrought, stop-chamfered or moulded, and varnished; the whole is covered with Bridgwater tiles. The church is heated by a Porrett's stove. The approach to the church has been much improved by the removal of the steps and lowering the path. The stone dressings and other Portland stone were supplied by Mr. R. Greenwood, of Weymouth.

Rye.—Sir E. Watkin, speaking at a meeting at Lydd, Feb. 13th, which resolved to petition the Houses of Parliament for a fuller inquiry into the claims of Dungeness to be converted into a harbour of refuge, said that, after a careful study of the subject, he had come to the conclusion that Dungeness was the proper site; and, on economic as well as philanthropic grounds, the absence of exertion on the part of the Government in the matter was supremely reprehensible. From a Parliamentary return it appeared that in the limited period of fifteen years the loss of property,—to say nothing of invaluable lives,—from Folkestone to Dungeness, through the absence of a harbour of refuge, represented a sum far in excess of any estimate yet advanced for ample and magnificent works at that spot. The undertaking was not a competition with Dover. Lord Brabourne thought that a fuller inquiry was needed.

The Tyndale Memorial.—The memorial statue of the martyr, William Tyndale, first translator of the New Testament into English, is to be cast in a few days, and it will be placed at the west end of the West Garden on the Thames Embankment. The statue, designed by Mr. J. E. Boehm, represents Tyndale in his doctor's robes, with his right hand on an open New Testament.

Art Foliage.—Mr. J. K. Colling, of London, delivered a lecture on "Art Foliage" at a meeting of the Leeds Architectural Association last week. Mr. Corson occupied the chair, and briefly introduced the lecturer, who began by saying that few attempts had been made in modern times to give architectural foliage its proper character of art workmanship. We go on reproducing and copying the works of former ages, and appear to be quite satisfied if in doing this we are able to produce a tolerably faithful imitation of old work. Why should not nature be appealed to? Why should not natural form be conventionalised and adapted instead of ancient forms revived? He confined himself here to architectural foliage carving, and did not claim for it a position above the subordinate one as an accessory to architectural ornament, and therefore subservient to the form of the work itself. When designing foliage, nature should be faithfully and constantly referred to; its endless beautiful forms should be drawn and stored up for future use. Yet these natural forms must in some degree be rendered differently; in other words, they must be conventionalised or altered sufficiently to make them applicable and suitable to the various purposes for which they were designed. No positive rules could be laid down for the manner of doing this. Every age had its own peculiarities, and every people their conventional mode of expression. Experience, too, had taught us that foliage and flowers could not be represented precisely as we saw them in nature. They must be modified according to the material in which they were wrought. For instance, carving in statuary marble allowed a closer approach to nature than could be the case with coarse sandstone; while the pattern on wall-paper might be a more direct imitation than architectural carving. In carving, we had to study chiefly form and light and shade. In form, we had first to decide upon the most proper laying or setting out of the lines before clothing them with foliage. To avoid monotony it would be advisable to introduce animal form among the foliage, as was often done in Mediæval work. The artist should not allow himself to be fettered by the forms in nature, but should work upon broad principles. In art, as in nature, there should be constant variety and change. No two designs in foliage should be precisely alike. Yet wherever Corinthian capitals were chosen for a building the same patterns,—accurately taken from some well-known example,—were used. This could not be true art. The designs seemed more like work turned out by machinery than by men. He urged artists and architects to strike out into new and independent combinations from nature. Great improvements had been made in carving within the last forty years, but we were still far behind the ancient schools in this class of work. There was a wide field in which we might go far beyond anything done by the Greeks or the Goths. Unfortunately, at present there was a distinct inclination to omit foliage from architectural ornament, or to confine it to a panel or two with a sunflower. Good foliage carving need not necessarily be dear, and all architects might work together to render it less expensive and more attractive and varied. The lecture was illustrated by means of numerous diagrams, in which Mr. Colling pointed out the combinations and arrangements of foliage ornaments.

Lectures on the Development of Ornamental Art.—The Painters' Company have arranged with Dr. G. G. Zerffi, one of the examiners and lecturers of H.M. Department of Science and Art, to deliver in Painters' Hall, Little Trinity-lane, near the Mansion House Station, three lectures on the "Historical Development of Ornamental Art" (illustrated by diagrams), specially addressed to operative painters and decorators. The first lecture will be given on Friday, February 23, at eight p.m., and treat of the origin of ornamentation, ornamental art in Asia, Greek, Roman, and Pompeian art.

Earley Church, Reading.—This church has been recently lighted up with some ornamental gas-fittings, from the designs of Mr. Francis Bacon, architect, Newbury, the work being carried out by Messrs. Jones & Willis.

Ramsgate.—A large addition to the Convent of the Assumption, Ramsgate, has just been commenced, from the designs of Messrs. Pugin & Pugin, of Westminster and Ramsgate. Messrs. L. H. & R. Roberts, of Islington, are the contractors.

Strong Rooms.—Messrs. Chubb & Son have just completed at their works at Glengall-road, Old Kent-road (which now contain the whole of their manufacturing departments), a large Fire and Thief-Resisting Room for the Credito Publico Nacional of Buenos Ayres. It is 9 ft. 10 in. high, by 15 ft. 9 in. wide, by 8 ft. 4 in. deep, and is made of wrought-iron boiler plates ½-in. thick, rebated at their edges, and secured by angle iron, bars, rivets, &c.; an air-chamber and cases of non-conducting material make up a thickness of 5 in. Its total weight is 43,988 lb. Entrance is obtained through doors of steel (with an inner flame-proof door), secured by a number of heavy bolts, which are locked by a small key of the size of an ordinary latch key. The inside is fitted with shelving, &c. The work of erecting this room has occupied the workmen for four months. It will now be taken to pieces, and re erected at Buenos Ayres by Messrs. Chubb's workmen; when it will be used for securing the books and papers of the Government of the Argentine Republic, who, some years ago, when the Government offices were destroyed by fire, had their important state documents saved in Chubb's Safes. They have also completed a larger strong room, measuring 9 ft. 6 in. high by 17 ft. 3 in. wide by 15 ft. deep. It is not intended to be fire-resisting, as it will be fixed inside a fire-proof building, but the plates used in its construction,—sixty in number,—are all 1 in. thick; the roof is supported by girders, and the sides and floor are connected by 550 ft. of thick bars and angle-iron. There are 2,940 separate pieces of iron used in making this one room. The total weight is 54,466 lb., and the cubical contents will allow standing-room to 100 persons, and the storage in bags of 48,000,000*l.* in gold.

Proposed Enlargement of the Tower Subway.—The report, just issued, of the directors of the Tower Subway Company, states that the traffic receipts for the past half-year amounted to 738*l.* 5s. 5d., showing a deficiency of 81*l.* 10s. as compared with the corresponding half-year of 1881, a temporary result which, they say, is readily explained by the removal of workmen's dwellings and shops for the widening of streets, the new buildings not having been yet erected. The dividend on the ordinary shares is thus only 2 per cent. instead of 3 per cent. as it otherwise would have been. A Bill for the construction of a carriage subway under the River Thames from Trinity-square, Tower-hill, to the opposite side of the river, which takes power to purchase the Tower Subway, is promoted in Parliament this year. The position is well selected for traffic, as is proved by the City Police returns. It will command the heavy traffic of Bermondsey-street and the Bricklayers' Arms goods stations, which a communication below the Tower would not attract, even if there were no steep inclines. The principal novelty in the proposed scheme is the use of lifts on Sir W. Armstrong's principle, instead of inclined approaches.

Edinburgh Architectural Association.—The association met on the 7th inst., the president, Mr. MacGibbon, in the chair. After some preliminary business, Mr. Andrew Dewar read a short paper on "Architectural Skylines," in which he expressed as his opinion that greater attention should be devoted by architects in their treatment of roofs and chimney stalks. Mr. MacGibbon offered some remarks on Dunblane Cathedral, in the course of which he referred to the peculiarities of the edifice in construction and design. This paper was illustrated by a series of careful drawings, prepared by Mr. Robert Watson. A paper, entitled "Notes on Rubbings from Iona," which had been prepared by Mr. Thomas Leadbetter, late of Edinburgh, now of London, was communicated by the president. At the conclusion, cordial votes of thanks were awarded to the speakers and Mr. Leadbetter.

Masters and Men.—A *réunion* of the *employés* of Messrs. T. W. Smith & Son, of 81, Finsbury-pavement, and 38, Moorfields, also of Isledon Works, Essex-road, Islington, took place at Barnsbury Hall, Islington, on the evening of last Thursday, to celebrate the recovery of Mr. J. E. Smith, the surviving partner and son of the late Mr. T. W. Smith, from a serious illness. A gratifying incident occurred when, after a speech from Mr. J. E. Smith recognising the good feeling present, he was presented with an album containing the several portraits of those connected with the firm, which was handed to him by a deputation headed by an *employé* of forty-seven years' standing.

British Archæological Association.—At the meeting last week, the efforts made to preserve the old Tolhouse, Great Yarmouth, were detailed by Mr. F. Danby Palmer, F.S.A., in a communication which stated that the Mayor and Corporation had agreed to sell the building for a nominal sum to trustees, to be devoted to some useful purpose. Mr. Brock, F.S.A., in reading the above, referred to the great antiquarian interest of the building, which is known to have belonged to the Corporation as early as 1251. The assurance of the safety of the building was received with much applause. Mr. W. de Gray Birch, F.R.S.L., spoke of the readiness with which the building could be adapted for a museum. The second paper read during the evening was on "The Traders' Signs in Old St. Paul's Churchyard," by Mr. H. Syer Cuming, F.S.A. (Scot.). After referring to the custom of denoting shops by signs, the animated appearance which the streets of a town must have presented in Mediæval times was referred to. St. Paul's Churchyard, having been always a place of considerable commerce, the number of trading signs must have been very great. Many hundreds were referred to of very different import.

The Artane Industrial School, Ireland. The buildings at Artane, visited a few weeks ago by the Lord Lieutenant, Earl Spencer, are in course of erection from the designs of Mr. Chas. Geoghegan, architect. Part of it is already completed, and in it some 700 boys are obtaining advantages from the system pursued there.

TENDERS.

For repairs and alterations to premises, No. 30, Sloane-street and Pavilion-road, Knightsbridge, for Mr. H. M. Harris. Messrs. Brunsden & Henderson, architects. No. 3, Barbican Chambers, Aldersgate-street:—

F. Saunders (accepted).

For reinstating damage caused by fire at No. 1, Faringdon-street, New Swindon. Mr. W. H. Read, architect:—

Barrett, Swindon (accepted)	£309 18 0

For the erection of shed for the Swindon Water Company (Limited). Mr. W. H. Read, architect:—

Webb, Swindon (accepted)	£84 12 5

For the erection of running shed and stable at V. W. H. Repository, Swindon, for Mr. T. Hooper Deacon. Mr. W. H. Read, architect:—

	Running shed.	Stable.
Pettifer	£520 0 0	£320 0 0
Phillips & Powell	515 0 0	316 10 0
Barrett	498 17 0	283 10 0
Willshire	430 0 0	250 10 0
Henley, Swindon*	419 0 0	210 12 0

* Accepted for shed.

For the erection of stable at Wroughton, near Swindon. Bricks supplied by proprietor. Mr. W. H. Read, architect:—

Barrett	£186 11 0
Willshire	174 0 0
Henley, Swindon (accepted)	132 12 0

For billiard-room and other alterations to Stormont House, Downspark-road, Hackney Downs. Messrs. Dunk & Geden, architects:—

W. Shurmur	£495 0 0
S. Yardley & Sons	455 0 0
Steel Bros., Dalston	415 0 0

For Wesleyan School Chapel, Sidcup. Messrs. Dunk & Geden, architects:—

Stebbings, Sidcup	£1,623 10 0
Adcock, Dover	1,583 0 0
Haisman, Foots Cray	1,490 0 0
Knight, Sidcup	1,490 0 0
Lowe, Chislehurst	1,455 0 0
Eldridge & Gee, Bermondsey	1,400 0 0
Wood, Chislehurst	1,349 0 0
Otway, Chislehurst*	1,327 10 0

* Accepted with slight reductions.

For sundry alterations, papering and painting, at No. 106, Queen's-road, Bayswater, under the direction of Mr. James Mathews:—

		Allowance for old materials.
C. W. Cross	£442 10 0	£3 10 0
Wilson	430 0 0	20 0 0
Hardwick	398 10 0	11 0 0
Tucker	398 0 0	8 0 0
Langler & Pinkham	390 0 0	
Gibbin	383 0 0	8 0 0
Barnett	369 0 0	10 0 0
Crampkin	360 0 0	12 10 0
Rutland & Rendell	342 0 0	10 0 0
Baldwin	338 0 0	12 0 0
W. Conway	330 0 0	10 0 0
W. Perkins	319 0 0	
Leask	310 0 0	3 0 0
Treweeke	297 0 0	10 0 0
Lack	287 0 0	7 10 0
A. Sterling	273 0 0	25 0 0
C. Pereria	338 0 0	20 0 0
Love (accepted)	215 0 0	10 0 0
Byford & Cross	206 0 0	7 0 0
Pereria	200 0 0	18 0 0
Earl	195 15 6	10 0 0

For shop front and fittings to No. 5, The Promenade, Kilburn, for Mr. T. Burkett. Mr. Walter Graves, architect:—

Helman (accepted)	£220 0 0

For drainage of Kelsey Park and Wickham-road, for the Beckenham Local Board. Mr. Geo. B. Carlton, C.E., engineer and surveyor to the Board:—

P. G. Pound, Bow-road, N.	£4,991	4	6
G. Stephenson, Market Harboro	4,304	12	7
W. J. Botterill, Cannon-street	3,977	0	0
G. Rayner, Liverpool	3,936	19	0
J. W. & J. Neave, Lewisham	3,928	17	9
Nowell & Robson, Kensington	3,848	5	6
G. B. Marshall, Brighton	3,757	11	10
Whittaker Bros., Leeds	3,710	12	6
H. Streeter, Croydon	3,692	10	5
Mowlem & Co., Westminster	3,615	18	3
J. Smith, Chelsea	3,594	13	4
Woodham & Fry, Catford	3,579	14	8
J. Dixon, St. Alban's	3,510	0	0
E. & W. Iles, Wimbledon	3,461	15	9
J. Young, Skegness	3,259	10	8
W. Carter, Anerley	3,241	16	2
Beadle Bros., Erith	3,192	0	0
A. Palmer, Birmingham	3,187	3	6

For additions to the North Surrey District Schools, Anerley. Mr. A. G. Hennel, architect. Quantities by Mr. J. R. Vining:—

H. Burman	£1,397	0	0
J. F. Sargeant	1,295	0	0
B. Cooke & Co.	1,250	0	0
J. & C. Bowyer	1,248	0	0
J. Marsland	1,247	0	0
Hunt & Challis	1,190	0	0
J. Longley	1,148	0	0
Smith & Sons	1,119	0	0
G. Masters	1,096	0	0
G. Amer	1,080	0	0
Priestley & Gurney	1,070	0	0
Hann & Co.	1,050	0	0
Parker	1,050	0	0
Le Gassick & Co	1,056	0	0
Holt	1,040	0	0
W. Johnson (accepted)	998	0	0
T. Crossley	993	0	0
F. Higgs	976	0	0
R. L. Wood	845	0	0
F. Buchan	835	0	0

For the extension of Penryn-road, Acton, for Mr. George Wright, The Elms, Acton. Mr. C. Nicholson Lailey, engineer and surveyer to the Local Board, Acton,:—

J. Narroway, Acton	£1,370	2	7
Nowell & Robson, Kensington	1,247	0	0
W. Nicholls, Wood Green, N.	1,197	0	0
J. Cardus, Acton	1,184	0	0
J. Pizzey, Hornsey, N.	1,175	0	0
R. Finnegan, Northampton *	1,147	0	0

* Accepted.

For the erection of four houses, Lucien-road, Tooting Estate, for the Directors of the Birkbeck Freehold Land Society. Mr. Sydney B. Grosvenor, architect:—

Burman	£3,287	0	0
Lawrence	2,950	0	0
Bassett & Son	2,920	0	0
Mason	2,791	0	0
Craske	2,650	0	0
Coulthard	2,585	0	0
Johnson	2,561	0	0
Hutchens, Streatham (accepted)	2,350	0	0

For the erection of market at Newark-on-Trent. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove:—

Contract No. 1.—General Builders' Work.

W Holdsworth	£1,878	0	0
Chapman & Jolland	1,738	0	0
T. Woolston	1,710	0	0
J. Bulling	1,530	17	8
Crosby & Son	1,419	0	0
Smith & Lunn	1,400	0	0
W. Duke	1,395	0	0
C. Baines	1,390	0	0

Contract No. 2.—Ironwork.

Young & Co.	£665	0	0
Bammage	524	11	9
Dawnay & Co.	485	0	0
T. & W. Bradley	448	6	10
Williams & Co.	440	0	0
Bridge Roof Company	425	0	0
Duke	420	15	0
Taylor & Parson	414	6	6
Victoria Foundry	383	0	0

For alterations and repairs at No. 20, Upper Wimpole-street, for Madame d'Agostino. Mr. F. Wallen, architect:—

P. Yardley & Sons (accepted)	£699	5	0

For the erection of two blocks of dwelling-houses (C and D) on the Bridge House Estate, Brockley, London, for the Land Development Association, Limited. Mr. W. Charles Evans, 3a, Poets' Corner, Westminster Abbey, architect:—

Wm. King & Son, Vauxhall Bridge-road (accepted)	£3,680	0	0

For alterations and additions to No. 44, Talbot-road, for Mr. J. H. Graves. Mr. Walter Graves, architect. No quantities:—

C. Frost	£791	10	0
H. Davey	725	0	0
Stimpson & Co.	581	0	0
Langridge & Son	555	0	0
J. O. Richardson	535	0	0

For alterations and repairs to No. 102, Southampton-street, Camberwell, for trustees of Mrs. May. Mr. Walter Graves, architect:—

J. O. Richardson	£127	0	0
Oldis Bros. (accepted)	119	0	0

For the erection of stables at Hampstead, for Mr. C. Kilburn. Mr. Geo. Sherrin, architect:—

S. J. Scott (accepted).

For alterations and additions to Brook House, Southgate. Mr. A. R. Barker, architect. Quantities by Messrs. J. S. Lee & Son:—

Foster & Dicksee	£5,242	0	0
Kilby	5,223	0	0
L. & W. D. Patman	5,123	0	0
Gardener	5,045	0	0
Higgs & Hill	4,960	0	0
Tongue	4,777	0	0
Horlock (accepted)	4,400	0	0

For alterations, &c., to the Stag Tavern, South Acton, for Messrs. Huggins & Co. Mr. C. H. Thomas, architect, 48, Pall Mall:—

Manley, Regent's Park	£450	0	0
Varden, Notting Hill	370	0	0
Rogers, Turnham Green (accepted)	350	0	0

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The Builder.

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The Autobiography of James Nasmyth.

NO portion of the duty of the public writer is more anxious, more solemn, and too often more sad, than that which calls upon him to inscribe in his columns the name of some distinguished man whose works on behalf of his fellows have reached their close. It may be the case of a brother student, artist, or workman, struck down in the prime of his vigour; it may be that of the ripe in-gathering of some grey-headed teacher to whom he has been wont to look up for a lifetime. Early or late, the loss comes always too early; and very often the sense of that loss is so profound as to render its expression as difficult as it is painful.

How many occasions of this kind have occurred since the *Builder* first was called into existence! How many even of late years! Whether we have ourselves taken up, with brief but earnest touch, the pen of the biographer, and have put on record a few words as to Barry, Street, Burton, or other distinguished and lamented architects; or whether, under the more impersonal form of reviews, we have spoken of the biography or the autobiography of such men as Brunel and of Brassey, of Rennie and of Fairbairn, a feeling of personal regret has tinged the page. With all the more satisfaction do we hail the occasion of introducing to our readers the narrative of a life long distinguished by its devotion to the service of mankind,—one still rich in vigour, as well as in happiness and in honour.*

The main difficulty that we experience in attempting to give our readers some idea of the life of James Nasmyth lies, not so much in selecting what to say, as in choosing what to leave unsaid. The life was so full, the paths in which the subject of our remarks made his way to distinction were so varied, the hobbies which he rode on holiday seasons were so indistinguishable from the plodding business hacks which did him such faithful work, that we labour under an embarrassment of riches. Let us try to take, in the first instance, such an aspect of the life of James Nasymth as may be most instructive, as well as most interesting, from the builder's point of view.

Born at Edinburgh on the 19th August, 1808, James Nasmyth was the son of Alexander, and the younger brother of Patrick, Nasmyth, each of them well known as a painter. "My father," he says,—he elsewhere says that he was called the father of landscape painting in Scotland,—"did not confine himself to landscape painting, or to the instruction of his classes. He was an all-round man. He had something of the universal about him. He was a painter, an architect, and a mechanic." The late David Roberts, himself a scene-painter of the highest character,—said that his style was founded on that of Nasmyth. Stanfield was another of his friends. On one occasion Stanfield showed him his sketch-book, observing that he wished to form a style of his own. "Young man," said Nasmyth, "there's but one style an artist should endeavour to attain, and that is *the style of nature*; the nearer you can get to that the better." Alexander Nasmyth was addressed as "architect," by the magistrates of Edinburgh. He was the designer of the Dean Bridge, which spans the deep valley of the Water of Leith, north-west of the New Town, and was professionally engaged in laying out the streets of this part of the city. A temple to the Goddess of Health, erected over St. Bernard's Well, and a design for Nelson's monument, are specimens of the taste of Alexander Nasmyth which form two of the beautiful illustrations of the Antobiography.

Michael Nasmyth, the great-great-grandfather of James Nasmyth, was born in 1652, and dwelt in the Grass Market, Edinburgh, in which city he established a business as architect and builder. The name and lineage date from the fifteenth century, and on page 3 of the Autobiography will be found a spirited sketch by the autobiographer himself of the scene in which the name had its origin. Sir Michael Nasemyth, Chamberlain of the Archbishop of St. Andrew's, obtained the lands of Posso and Glenarth by marriage, in 1544. In the fourteenth century a branch of the family settled at Netherton, near Hamilton. The Netherton property was confiscated in the troubles of the reign of Charles II. It is a remarkable coincidence that the ancient crest of the family which produced the inventor of the steam hammer (one of the most formidable implements of the modern Vulcan), should be a dagger between two broken hammer-shafts.

A draughtsman of rare ability, James Nasmyth has thus an undoubted right to say "our history begins long before we are born." The hereditary culture of art, and its effect in giving power to the hand, is well illustrated in this gifted family. Few things are more sure than that facility in the use of the implements, either of war or of peace, is a distinctly heritable quality, although, of course, susceptible of improvement by culture, or of loss by neglect. Speaking of the delicate needlework of his grandmother,—Mary Anderson was her maiden name,—Mr. Nasmyth says, "I am fain to think that her delicate manipulation in some respects descended to her grandchildren, as all of them have been more or less distinguished for the delicate use of their fingers, which has so much to do with the effective transmission of the artistic faculty into visible forms. . . . I can not look at my grandmother's sampler without thinking that she had much to do with originating the Nasmyth love of the fine arts, and their hereditary adroitness in the practice of landscape and portrait painting, and other branches of the profession." We altogether agree with this view of Mr. Nasmyth, and are convinced that it requires several generations to admit of the training of the hand to art. The case of Charlemagne should not be forgotten. That great soldier and legislator is said never to have been without a copy-book at hand, by the aid of which he improved his odd moments in endeavouring to perfect his handwriting, without, however, ever getting beyond a childish scrawl. The neglect of the cultivation of drawing, as an essential element of almost primary education, is one of those grave oversights of our own educational reformers and legislators which does more to keep the workman's children down than most of the board school *curriculum* does to raise them up.

We have been for many years acquainted with the extreme delicacy, as well as force, of the drawings which James Nasmyth turns out with his left hand. In accuracy of delineation they more closely resemble the work of George Cruikshank than any that we can at the moment recall. The grotesque element, however, of which Cruikshank was so well-known a master, is alien to the gentle temper of Nasmyth, from whose pencil come most of the hundred illustrations that adorn the Autobiography. What force do these delicate drawings lend to such a remark as this?—"There was one point which my father diligently impressed upon his pupils, and that was the felicity and the happiness attendant upon pencil drawing. He was a master of the pencil, and in his off-hand sketches communicated his ideas to others in a way that mere words could never have done. It was his graphic language" (p. 57). We advise our readers carefully to study the paragraphs in which James Nasmyth again and again returns to the subject of the utility of a command of the pencil, as well as of the delight which the pursuit yields to its followers. More than any man we can name he thought pencil in hand. That used, the art tool becomes more than an instrument of record. It not only perpetuates and communicates thought, it aids in the process of thinking. On p. 298 will be found "an order for dinner" which, at Upsala in 1842, Nasmyth, unable to speak a word of Dannemora Swedish, made perfectly intelligible to his bright, cheery, jolly hostess, who could not speak a word of English. And it is not to what is usually meant by the word sketch, that the work of the pencil should be, or was in the present case, restricted. Careful and exact, when exactitude was requisite, Nasmyth measured the dimensions of his architectural sketches, no less accurately than those of his drawings of machinery. Going to Elgin, in order to provide his father with materials for two paintings commissioned by the excellent brothers Grant, he "made most careful drawings of that noble cathedral. I endeavoured to include all that was most beautiful in the building and in its surrounding scenery. . . . I did my best to carry away a graphic sketch of the old castle and its surroundings. I had the pleasure of placing in my father's hands the sketches I had made. He was greatly delighted with them. They enabled him to set to work with his usual zeal, and in the course of a short time he was able to execute, *con amore*, the commissions of the brothers Grant" (p. 195).

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* James Nasmyth, Engineer; an Autobiography. Edited by Samuel Smiles, LL.D. With a portrait by G. Reid, and numerous illustrations. London: Murray. 1883.

What sort of tool the pencil may become in hands trained to its employment is well shown in the illustrations of the Autobiography. We call attention to the delicate drawing of a door-head from an old mansion (on p. 83), to the mural crown of St. Giles (p. 74), to the monument to Alexander Nasmyth (p. 231), to the view of Hammerfield, Penshurst (p. 373), and, as a triumph of imaginative architectural design, to the astrologer's tower (p. 344). Let the reader compare those structural drawings (not forgetting the interiors on pp. 323 and 440) with the numerous diagrams and working drawings on the one hand, and with the landscapes and figure-pieces on the other, and he will see how wide was the sweep of Nasmyth's arm. We should like to know exactly how the beautiful drawings of the moon on pp. 331, 332, and 335 were produced. They suggest the aid of photography; but we find (p. 329), "I made careful drawings with black and white chalk on large sheets of gray-tinted paper of such selected portions of the moon as embodied the most characteristic and instructive features of her wonderful surface. I was thus enabled to graphically represent the details with due fidelity as to form, as well as with regard to the striking effect of the original in its masses of light and shade, I thus educated my eye for the special object by systematic and careful observation, and at the same time practised my hand in no less careful delineation of all that was so distinctly presented to me by the telescope at the side of which my sheet of paper was handily fixed." We rather think that the clear definement and sudden contrast of light and shade in the illustrations that we have cited are superior to those which the borrowed light of the moon would produce through the agency of the camera; and that they represent the surface of the planet as seen through a powerful telescope, and drawn after nature. The vertical shading of the plane parts of the view of lunar mountains and extinct volcanic craters on p. 335 certainly denotes mechanical, as distinct from photographic, treatment. In a second edition (which is certain to be very soon demanded) we hope that Mr. Nasmyth will add a note as to the process by which these very beautiful views have been brought before his readers. The same remark applies to the drawing of the sun spots (p. 384). We also call attention to the quaint beauty of the "extemporised shower-bath"; which will recall to many of our readers one of the finest of Doré's illustrations of "Paradise Lost." But we owe no small apology to Mr. Nasmyth for the suggestion. Neither artist, we feel sure, can have taken the hint from his brother, and the nude figure in the "Paradise Lost" represents the impersonation of the last character to whom it is appropriate to refer in speaking of James Nasmyth.

It will, we think, be clear to the readers of the Autobiography that James Nasmyth had in him the makings of an architect of no inferior order. As to a draughtsman, he had more than the makings, he had the thing made. But this rare gift of the power of the pencil,—like others of which he says nothing,—seems only to be regarded by the autobiographer as one of the elements of his success as an engineer. "It was in the year 1817," says our author,—he was then nine years old,—"that I had the pleasure, never to be forgotten, of seeing the great engineer, James Watt. He was then close upon his eighty-second year. His benevolent countenance and his tall-built figure made an impression on my mind that I can never forget. It was even something to have seen for a few seconds so truly great and noble a man." The impression then produced on the boy seems to have aided in turning his attention from a passion for the collection of views to mechanical pursuits. His ideas were formed, and his mechanical education was half unconsciously commenced, among the lathes and tools of his father's work-room. Spinning tops, "peeries," and "young cannon,"—then fashionable play-things among the small people of the High School,—were his earliest productions. Flying kites and tissue-paper balloons were articles that he was famed for producing. To the maintenance of the perfectly still and steady position of a kite when at the highest flight in the air anxious thought and special skill were devoted. Nasmyth says nothing of the tail of his kites. We conclude that he did not anticipate the admirable flight of the Chinese bird kites, which are unprovided with those cumbrous appendages, and which owe their soaring powers to certain little open pockets left in the wings. And here we may mention, for the sake of our younger readers, the splendid effect that may be produced by a hexagonal kite, each sector of which is fastened to a lath radius on one side, and left free on the other. The periphery of the hexagon may be formed of string. This kind of kite requires to be raised by a leader, or upper kite, and when up, revolves with great rapidity,—forming a capricious and beautiful object. The only difficulty is the need of providing strong steel swivels, without which it very soon twists the line in two.

"Jemmy Paterson" and "Tom Smith" were two of Nasmyth's cronies at the High School. The first opened to his comrade the foundry and workshop of his own father. The father of the second had a special genius for chemistry. Thus did the boys become fathers of the men. At seventeen James Nasmyth began with making a small working steam-engine, for the purpose of grinding the oil-colours used by his father in his artistic work. "The result was quite satisfactory. Many persons came to see my active little steam-engine at work, and they were so pleased with it that I received several orders for small working engines, and also for some models of steam-engines to illustrate the subjects taught at mechanics' institutes."

At twenty-one, James Nasmyth had the good fortune, on the strength of the models, and the mechanical and perspective drawings, which he had by that time completed, to be engaged as a personal assistant to Henry Maudslay, head of the well-known firm of manufacturing engineers in London. The account of his introduction is too long to extract, and too charming to condense. No position could have more advantageously tended to foster and bring out the strong mechanical genius of the young man. At that time our primary mechanism had not generally advanced beyond the condition of the village blacksmith's work. No rules or normal dimensions had been laid down for screws, bolts, nuts, or any other of the numerous and constantly recurring elements of machinery. Thus if a bolt was broken, in an important machine, work had to stop while another was made and fitted, to replace it. The very first job that fell to Nasmyth, on commencing his attendances at Maudslay's workshop was to assist in the details of "a machine for generating screws." "This beautiful and truly original contrivance became, in the hands of its inventor, the parent of a vast progeny of perfect screws, whose descendants, whether legitimate or not, are to be found in every workshop throughout the world where first-class machinery is constructed."

There were, however, other legitimate lines of mechanical descent which should not be forgotten. It was in the latter part of 1831 that Nasmyth commenced that business on his own account which not only provided him with an adequate fortune by the early age of forty-eight, but furnished our dockyards and arsenals with the most formidable and useful tool ever wielded by the servants of Vulcan. But in 1817 a man of not unlike acquirement had established, in High-street, Manchester, "a miserable shed, containing a single lathe, which the two partners made with their own hands, and which was turned by their one workman, a muscular Irish labourer." From this modest beginning sprang the important and lucrative business which was transferred to the "Fairbairn Engineering Company, Limited," in 1864. Again, the life of Sir Joseph Whitworth is yet a desideratum. He was elected a member of the Institution of Civil Engineers in 1841, but did not enrich the annals of that important society with any communications of earlier date than 1860, when he exhibited a model of his rifled cannon at a meeting of the members. His little book on "Guns and Steel" is dated in 1875. But in those very departments of exact measurement and exact execution of work, to which Nasmyth justly attaches so much importance, Whitworth must have been a contemporary labourer, and that with a fidelity, genius, and success second to no man living. And the Nestor of the profession, John Ericsson, K.V., born in 1803, came to England in 1826. Of his early life here we find no record, either in the article on his name to be found in *Scribner's Monthly Illustrated Magazine* for April 1879, or in the magnificent quarto "Contributions to the Centennial Exhibition," by John Ericsson, LL.D. (New York, 1876), one of the most splendid volumes on mechanical subjects that ever issued from the press of any country. But in 1829 Ericsson's locomotive, the "Novelty," was a competitor for the prize offered by the Liverpool and Manchester Railway Company, and far exceeded in speed, although not in stability of workmanship, Robert Stephenson's "Rocket," which obtained the 500*l*. prize. Certainly in 1833, probably some years earlier, Ericsson was in partnership with John Braithwaite, at the well-known engineering works in the City-road. He must, we think, have been at work at Warrington at the time that Nasmyth established himself at Manchester. We refer to these matters, not as in the least affecting the claims of Nasmyth to originality, as well as to admirable simplicity and finish of work, but as showing that about the same time the attention of more than one man of genius was specially bent on this very object of making self-acting tools, and of introducing into our manufacturing metallurgy that system to which we are so much indebted for the advance of our practical science. To the names of Ericsson, Stephenson, Braithwaite, Fairbairn, and Whitworth as honourable rivals of Nasmyth, we may add those of the Bramahs, who introduced the same exquisite accuracy of detail into his hydraulic presses, his locks, and other productions. Sir Charles Fox, referred to in the autobiography (p. 435) as a personal friend, had been educated for the medical profession, but commenced his engineering career in the workshop of Ericsson, and afterwards, in partnership with J. J. Bramah, founded the London works at Smethwick, near Birmingham, where the ironwork of the Crystal Palace was prepared.

A chronological list of as many as forty mechanical inventions and technical contrivances, children of the fertile brain of Nasmyth, is appended to the volume. It is extremely interesting to be able to trace the origin of some of these plans, although it is quite possible that they may have been independently invented by different men. The mode of applying steam power for the traction of boats which (without date) is put first, is now in constant use on some of the German rivers. To the American dentist's drill, in which rapid rotary motion is given to a point, which can, at the same time, be guided and applied where required, we have, we think, previously called attention, as one of the greatest triumphs of mechanical genius. We were unaware before that it was an invention of Nasmyth's. The safety foundry-ladle was a great boon to the metallurgist. But the invention by which the name of James Nasmyth will be chiefly immortalised is that of the steam hammer. The account given (p. 239) of the conception and the early testing of this most important tool deserves careful study. It is a very rare instance of an invention, not casually arrived at, but thought out, within a definite and short space of time, for the accomplishment of a definite task. In 1839 there was not a forge-hammer in England or Scotland powerful enough to forge a paddle-shaft of the size that Mr. Brunel required for the *Great Britain* steamer! A photograph of the first drawing made by Nasmyth to supply this serious want is given on p. 241; sketched, the author tells us, in little more than half an hour after his attention was called to the subject. So complete was the drawing that, in April, 1842, Nasmyth, to his no small surprise, was shown a steam hammer, made from his design, at work in the great French engineering establishment at Creuzot. M. Bourdon, one of the partners of that establishment, had been shown Nasmyth's drawings by his partner, Mr. Gaskel, and, while no one in England had realised what a mighty agency was thus offered to the forge, had quietly gone home and made one. Nine men out of ten would have raised a loud outcry as to piracy. Nasmyth seems only to have been charmed with the compliment! "On inspecting the steam hammer, I found that Bourdon had omitted some important details which led to a few mishaps. I sketched for him, there and then, in full size on a board, the elastic packing under the end of the piston rod, which acted, as I told him, like the cartilage between the bones of the vertebræ, preventing the destructive effects of violent jars. I also communicated to him a few other important details which he had missed in his hasty inspection of my design. Indeed, I felt great pleasure in doing so; as I found Bourdon to be a most intelligent mechanic, and thoroughly able to appreciate the practical value of the information I communicated to him."

As far as our reading goes, the above anecdote is without a parallel in the annals of science. Too often devoid of that practical prudence which is necessary for the acquirement of riches, inventors are, as a rule, an irritable genus. To complete the work of the pirate was, indeed, a noble forgiveness of the theft! It is some comfort to learn that after this, Nasmyth took out a patent for the steam hammer, both in England and in the United States. It must be remembered that M. Bourdon had rendered this step impossible in France. The Russian Government ordered one of these implements twelve months before the English Admiralty did so! The whole of the history of the steam hammer is of the greatest interest, whether as illustrating the genius of the engineer, or the character of the man. Nor can any one hesitate to accept the testimony, "without entering into further details, the steam hammer has advanced the mechanical arts, especially with relation to machinery of the larger class, to an extent that is of incalculable importance."

Dr. Smiles has contributed a short preface, and says that he was requested by Mr. Nasmyth not to spare his pruning knife in preparing the autobiography for publication. It is, however, impossible to distinguish to what extent the work, as it comes before the public, may be indebted to the editor. There are, we must add, not a few errors in slight matters of spelling and of grammar, as to which it is unnecessary here to say more than that we hope they will be removed from the text of future editions of this charming work.

WAGNER.

LAST week witnessed the close of what all must admit to have been a very extraordinary artistic career. We use that adjective advisedly, inasmuch as Wagner was not a musician pure and simple, and if regarded in that light alone his claim to rank as a great genius would be much more questionable than it is. He has left but little music which, as music, apart from any of its associated effects, would attract many admirers, or stand the test of criticism in regard to form and construction. Nor did he, in fact, profess to aim at this. What he did was to discard the idea of using music as an artistic form complete in itself, to which, in lyric drama, the conditions of the poetry and the action were to be subordinated, and to regard and treat the whole of the elements of lyric drama, the poem, the music, the scenery, and the action, as a combined form of art, whole and complete only when so regarded, and in which each element of the effect was to be considered in relation to the others, and to the combination of all towards one grand *ensemble*. In promulgating this view, he allowed himself, as all ardent reformers in art do, to indulge in very one-sided and unjust depreciation of the work which had been previously effected upon the basis of what he considered a partial and incorrect theory. All lyric drama before his own, in fact, was to be considered as abortive failure. It is more than doubtful whether such a judgment could be justified even in regard to the logical question of the relation of the music to the drama in such operas as Mozart's, for instance. All opera, all stage art, is more or less conventional; the attempt at absolute realism on the stage has generally been felt to be a failure in regard to the higher objects of the drama, whether lyrical or spoken; and the ideal in regard to the proper degree of conventionality has varied very much at different times, and in the minds of critics equally competent, but swayed by different views as to artistic principle. Goethe, for instance, when in his younger days he not only wrote for but superintended the Weimar stage, was so strongly impressed with the necessity of a high degree of convention, that he would not even allow the actors to assume a natural grouping on the stage, or to act directly to each other, but compelled them to stand in a symmetrically-arranged rank or semicircle, and deliver their speeches rather to the audience than to each other. We, in the present day, should consider such a system of stage management as painfully formal and ineffective, but it does not follow that Goethe was wrong from his own point of view, only that his idea of the object of drama was different from ours. Similarly, it can hardly be said that the Mozart form of opera was necessarily deficient or artistically incorrect, but only that Mozart and his compeers took a different view of the relation of the music and the drama, and regarded the latter as furnishing characters and situations which were to be the suggestions and incentives to musical expression. The pleasure to be derived from this school of lyric drama is more musical than dramatic; that to be derived from the Wagner school is more dramatic than musical, save in some exceptional scenes here and there; and it will always probably remain an open question whether the highest enjoyment is derived from opera in which the musical development, though paramount, is so beautiful as to furnish the highest musical enjoyment, even apart from its place in the opera, or from that in which the music is more closely blended with, and even subordinate to, the action, but is not of such intrinsic beauty and completeness as to confer a pure enjoyment apart from the stage. What is unquestionable, however, is that Wagner has conferred a distinct gain on the world by initiating a new form of lyric drama instead of merely working on the lines of an old form, and has, by this means, achieved a position as a creator in art which he probably would not have achieved as a musical composer in the old signification of the word. In place of the elaboration of musical expression at certain salient points of the story, connected by passages of semi-musical speech ("recitative"), he has worked out a form of musical drama in which the poem, and not the music, takes the first place, and in which the musical expression and the action are simultaneous in progression, and cohere throughout the work. This of course means the cutting short of the musical development, for which repetition and extension are necessary; and he seems to have been led by the feeling of this necessity to the endeavour to expand the power of the musical expression in another direction, that of instrumental effect, or what is called among musicians "orchestral colouring"; he has given great novelty and intensity to the effect of the orchestra as a whole; and the part played by the band in his operas is that of a stream of richly-toned continuations of sound, varying with the lights and shadows of the drama, and with the contrasted characters of the personages on the stage.

This is practically almost a new form of art; at the least, the suggestion for a new point of departure, of great interest and importance. It is not likely that the works he has actually produced will have the great and permanent interest which the enthusiasts of the school anticipate. It is unquestionable that there are great drawbacks to any permanent and wide-spread admiration for these works in their present form: drawbacks consisting in deficiency of beauty and clearness of form in the music, in the absurdities and extravagances of the poems and of many of their incidents, in their inordinate length, and in the monotony and frequent repetition of effect which cannot but be felt,—which certainly was felt very strongly, far more strongly than was anticipated, by a large proportion of those who were present at the performance of the "Nibelung's Ring" in London last season. It must be felt, too, that a good deal of the musical effect is of that order which appeals to the nerves rather than to the intellect; it is a sensuous art, like that of Rossetti's paintings. Whatever may be the future of Wagner's productions, however, his influence will be felt on the lyric drama of the future (if there is to be any), in leading to a more thoughtful consideration of the relation between the poem and the music, and rendering it impossible for composers to be content, as Rossini was, with setting to music any sort of *libretto*, so long as it will give occasion for the requisite number of airs for the requisite number of leading singers.

Some of the characteristics of Wagner's speech and habits, which have become public both before and since his death, render it impossible to doubt that there was a very strong vein of charlatanism in his nature, and there can be no question that, by his own pen and those of his sworn admirers, he carried the art of blowing his own trumpet to a point which has seldom been equalled. On the other hand, it is impossible not to admire, though with reservation, the indomitable will and energy by which he succeeded in forcing himself upon his generation in the teeth of the opposition of almost all Europe,—a quality which is in itself a great element of genius.

A POPULAR WORK ON THE RENAISSANCE.

IT is one of the unmistakable signs of the turn which public taste in this country has taken, that books in illustration of the Renaissance period multiply so fast at present. The rapidity of the change is bewildering when we reflect how short a time since it is that Mediæval art was everything, and that men so popular and successful among modern architects as Pugin were pouring forth all the contempt that words could express against the period which produced St. Peter's and the Florentine palaces. The work which now claims our notice * is intended as an introduction to the study and knowledge of this period of art, more general and popular in style than others which have appeared. The author says in his preface, "The subject of the Renaissance has been treated by many authors and in various spirits. Mr. Symonds has written a scholarly treatise, taking up its moral, literary, and artistic aspects, each from its separate point of view. Burckhardt has treated of it politically, and with a vast amount of erudition. Mr. Pater has analysed certain fragments; and Mr. Ruskin has woven about it a maze of golden thoughts, drawing some of his most telling comparisons and contrasts between Northern and Southern art." The present author excuses himself for occupying ground previously trodden by such able writers, by the conviction that a more practical and homely view may be useful to a large class of readers "in tracing the many ramifications of art from their parent stock, and in bringing to a focus the different elements composing that complex movement which we call the Renaissance." We are not, as a rule, very much in favour of "popular and practical" treatises on art, which too often may be equally described as partial and superficial. Mr. Scott's volume appears, however, to be an exception to this tendency, and to be at once "popular" (in the sense of being easily intelligible and avoiding too fine-drawn criticism), and trustworthy as a broad general indication of the history and characteristics of the art of the Renaissance. The author, indeed, disclaims for it any so serious an aim as would be implied in the title "a history"; it is rather, he says, a "pictorial guide" through the intricate mazes of the artistic history of the extraordinary period which is dealt with. A quarto volume of more than 350 pages, very copiously and variously illustrated, and written with an adequate knowledge of the subject, may fairly claim its right of existence on such terms.

Mr. Scott starts with the view that architecture is the central art, as leading to and affording place and opportunity for all the others. He gives one practical illustration of this, which is not always noticed, viz., that in the first great era of the Renaissance every one of the nine great architects was also a sculptor; in the second era, of the five leading architects two were also sculptors; while of the eleven professed sculptors, only one,—Ghiberti,—was also an architect, and he not a very successful one. He divides architecture into four main groups,—Military, Religious, Civil, and Domestic, taking their rise chronologically in the order named. Of these, the second is the chief exponent of style, as the class of architecture which rises most above material considerations, and into which, accordingly, the architect has most encouragement and opportunity to put his best thoughts. The critical definition of the phases of Italian architecture in the early days of the Renaissance is very correctly and, at the same time, picturesquely put, especially in regard to the early Lombard churches, with their profusion of sculpture, in which was represented the wild and fierce imagination of the Teutonic element, which, in the early Renaissance days, or rather, the days immediately preceding the Renaissance, exercised such a sway, political, social, and military, over the North of Italy; a subject on which some of the most vivid and striking lights are thrown in various passages in Browning's "Sordello," which same poem reminds one of another point touched on by the author in allusion to the civil architecture of the period; namely, the effect which must have been imparted to the towns by the universal use of towers as adjuncts to every dwelling of importance, at a time when every man's house might have to be literally his castle, and a tower for outlook and for commanding the assailants was a practical necessity. In the tenth century Pisa, Siena, and Florence had each several hundred towers; and thus Browning, who understands that period so well, represents the Pope's legate before he was admitted inside Ferrara, which was in the hands of Ecelin's general, as wondering where all the steeples had gone,—

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* The Renaissance of Art in Italy: an Illustrated Sketch by Leader Scott. London: Sampson Low & Co. 1883.

> "A-tiptoe o'er the fosse
> Look'd Legate Montalungo wistfully
> After the flock of steeples he might spy
> In Este's time, gone (doubts he) long ago
> To mend the ramparts."

Mr. Scott mentions San Gemignano as the only place where the reality of a town of towers is preserved intact to this day. "After the feudal times the tower interest centres in the campanile which adorns every city." Whether we should agree with him on the judgment that the Italians excel all nations in tower-building is another question. The Italian campanile at its best is a very fine and characteristic form of tower architecture, but Ruskin set a fashion of somewhat overpraising it; some of the finest examples are rather impressive by their size, their height, than their design; and a good many of the more average specimens are elegant indeed, but not powerful-looking architecture. The characteristics of the Italian architecture of the first Renaissance era, of the days of Cimabüé and Giotto, are well described and sufficiently illustrated by engravings; the development of the peculiarly characteristic Italian façade, the ornamental mask of the real building, is touched upon, and a parallel is suggested between the sculptures of Orvieto and Wells executed about the same time. One of the comments on Orvieto, however, is misleading; the author says, "how different the mode of working was with those earnest artist-architects to that of the present day! A modern sculptor carves his ornamentation on thin marble panels, and faces the brickwork with them,—they are, in fact, only an extraneous ornament. The sculptors of Orvieto built up their façade in solid marble blocks, dovetailing one into another with such precision that they produced a perfectly smooth surface, on which they hewed out their conceptions fresh from their earnest minds. The 'Expulsion from Paradise' is carved right over some joints." This is a little bit of what we should call sub-Ruskinesque rhetoric. Can Mr. Scott say how the sculpture was the better for being carved over the joints? And if he means to convey the idea, which to uninformed readers the passage would convey that the Italian marble architecture of that period was remarkable for its solidity, what of the Duomo and Campanile of Florence, which come into the same chapter? It is, in fact, the most notorious defect of the Italian quasi-marble architecture of the Renaissance, that it is a veneering only, and often a very thin one, and Mr. Scott's enthusiasm has led him into conveying to his readers an idea about Italian architecture which is the reverse of the true one, in that particular.

In speaking of the "mosaic and metal work" of the early period, the author notes that mosaic is a mode of expression which "seems to belong to a low state of art." This will appear a very erroneous judgment to some, but in regard to the representation of the figure it may be said to be true both critically and historically. As to the latter, he points out that in Rome mosaics only came into favour when artistic feeling was dying out, and when more attention was given to the richness and cost of material than to the excellence of art. A great many of the Roman mosaics that have been preserved represent, in fact, the kind of art which, as practised in the later days of the Renaissance, has been called "Rhopography," which in the vernacular may be rendered "the painting of rubbish," incongruous collections of articles worthless and uninteresting from an artistic point of view; and, "in Florence," he observes, "we hear of very few artists who worked in mosaic after the thirteenth century, until in the decline under the luxury of the Medici, when Florentine mosaic arose, and precious stones and marbles were again made a means of pictorial expression. The hardness and impliability of the material forbids its use in the expression of the highest art." This is certainly true: mosaic recommends itself strongly as an architectural decoration from its splendour of surface and its durability, but its successful use in figure subjects can only be realised when these are simple and severe in style, and seen from a considerable distance. The attempt at a too natural and varied expression in the figures brings into prominence the unyielding nature of the medium; a fact which is not perhaps sufficiently kept in mind at present, when there is so much talk about the use of mosaic decoration on a great scale.

The second era commences architecturally with Brunelleschi, upon whose character the author is rather severe, as being selfish as well as ambitious. We do not quite subscribe to this. Brunelleschi was a man of power in his own profession, which he understood better than most of his compeers; and he liked to have his own way (as many architects do), and had it (as few architects have). He remarks on Brunelleschi's apparent foresight in regard to the coming taste for Classic models in architecture, shown in his giving up so much of his early professional days to study in Rome. The part played by architecture in the third and peculiarly Classical epoch of the Renaissance was, as the author remarks, very important; it seems to have been from the remains of Roman architectural greatness that the impulse was given to literature, rather the other way. The literary remains of Rome had to be sought among the rubbish of monkish libraries, and were only recovered piecemeal, and often by happy chances; the architectural remains were there in the face of day, calling openly for recognition. Mr. Scott's judgment of St. Peter's is more favourable than most architectural critics, even now, will be ready to concur in. He does not seem to be aware of the part which Bramante has almost conclusively been shown to have had in the idea of the building, nor can we profess to understand what he means by saying that Michelangelo "disclaimed the heavy support of Bramante's four piers and removed them, boasting that he would raise the Pantheon in the air." This appears to be nonsense as it stands; the dome is supported on four piers, in which Bramante's original piers, as far as carried out, are incorporated. The sentence would imply that Michelangelo carried the dome on nothing, "which is absurd," as Euclid says; the paragraph seems to have been written hastily, and requires revision. But in the main, in spite of the one or two slips we have mentioned, the architectural portion of the subject is fairly well treated, and that is more than can be said for the treatment of the subject in popular works generally.

The account of the various successive schools of painting is clear and readable, and largely illustrated, and among the illustrations are some reproductions of that interesting class of Renaissance work, the outline engravings, of which the celebrated "Hypteronomachia" furnishes the most remarkable examples, and which throw so much light on the social as well as artistic feeling of the period. Ornamental art is somewhat briefly treated, but perhaps as fully as would be possible within the limits of such a book, the subject being really almost endless. Some very good and not very well known illustrations accompany this part of the work. In the chapter on Intaglio and Cameo work, the author would have done well to have given a distinct definition of the precise meaning of the two words, about which many readers of a popular treatise are likely to be uninformed. In speaking of the works of Titian, in one of the chapters on painting, he seems to be in some confusion of ideas as to the painter's well-known work, "Earthly and Heavenly Love." The correctness of this title has been contested by Messrs. Crowe and Cavalcaselle, who suggest a title which we agree with Mr. Scott in disliking, as it implies a disagreeable and somewhat impure *motif* in the work. We forget whether they also suggested the alternative title, "Virgin and Matronly Love," which seems to us the best description of the work, or whether we ourselves suggested it in reviewing their book a good while ago; it has been suggested in these columns one way or the other. But Mr. Scott, taking the old title, assumes the nude figure to be Heavenly Love and the clothed one the Earthly; and though we quite agree that such an interpretation gives the higher meaning, we certainly never heard it interpreted so, nor do we believe that Titian meant it. His age was too lascivious to have understood such a meaning.

As an example of the tone in which the author considers his subject generally, we quote in conclusion his final paragraph, referring to the possible causes of the decline of the art of the Renaissance:—

> "In any great artistic movement there seem to be three stages. The first when art is rare and deemed worthy of the highest offices,—when it is, in fact, the handmaid of religion. The second, when the nation gains wealth and art becomes aristocratic, its tone is lowered, its objects widened; it is not only a teacher and means of fame, but a flatterer and means of wealth,—it has become the handmaid of ambition. The third is when it becomes universal; inferior artists look upon it as a trade, and in the great struggle for patronage,—the supply being by this time greater than the demand,—they strive to get to the front by startling originality, new methods of handliing, bizarre mannerisms, and all kinds of illegitimate art. Patrons are as emulous as artists; each seeks to gratify his own taste, high or low, and art falls to the general tone of the age,—it has become the handmaid of ambition.
>
> Thus it happened that the early painters were high-toned and earnest; those of the culmination, sensuous and of high talent,—those of the decline, mannerists and of low motive: the Artist is Child of his Time."

FROM ABROAD.

The international fine-art exhibition which was opened in Rome towards the close of January has at length assumed a somewhat definite condition of completeness. In spite of the delays accorded, the show was very far from being in readiness when it was thrown open to the public, and no little dissatisfaction was expressed. Whether owing to the serious competition,—for in these commercial days such a word is permissible in speaking of art,—from which in such a city as Rome any exhibition of modern pictures must inevitably suffer, or to other reasons, the first returns of the number of visitors to the Fine-Art Palace erected in the new quarter near the Baths of Diocletian would not seem to point to a very brilliant success. The figures we have seen quoted, of 1,000 visitors daily in the winter season when Rome is crowded, would seem to suggest that the interest cannot be very great. Now that Carnival is over, the last *confetti* thrown, the last *moccolo* put out, and Lent seriously commenced, perhaps the exhibition will, in theatrical language, commence to "draw." After all, perhaps the Romans are right in their indifference, for sad complaints reach us from the banks of the Tiber concerning the condition of Italian art as represented at the exhibition. The simple earnest work of the painters of the Renaissance finds no echo in the heart of the modern Italian artist. The older Italians resignedly agree, with a shrug of the shoulders, that "art is dead"; the modern school have thrown over all the traditions of the past, and hence at the exhibition now open in Rome,—as any one who has had the opportunity of seeing Italian art displayed at our recent international exhibitions can fully understand,—sad are the complaints of the garish exuberance into which the painters of modern Italy have strayed in their study of the great Spanish master, Fortuny. The poetic sentiment of which their country seems the very incarnation, and which has inspired so many a foreign pen and brush, the appreciation of that pathos of neglect so dear to the painter and the poet, and which surrounds each historic site of the Classic peninsula, seems almost entirely deficient, and well can we understand the Italian art-critics bewailing the tendencies of the art of the united Italy of which all good Italians are so proud. Let us hope that Italy will make a more satisfactory show at the Industrial Exhibition which is promised us at Turin for next year, and for which we learn that the quaint French château-like palazzo Valentino, on the banks of the Po, is being prepared.

It is almost safe to predict that it will be very different with the approaching exhibition to be held in a short time in Amsterdam, the artistic interest in which is daily increasing as fresh promises of the treasures to be displayed are announced from time to time. A project for a generation past discussed, but never carried out, has at length, it is said, been determined on, the union under one roof of the treasures of the Trippenhuis and the Van der Hoop Museum. It is one of the advantages of these international exhibitions, the successful manner in which they stir into emulative life institutions and schemes long neglected; old collections are furbished up, tiresome regulations abolished, and a general preparation made for the reception of the world at large, resulting in a marked improvement for which all future visitors are grateful. In these days of all-invading realism, the still happy band of lovers of the ideal are gleefully looking forward to the treat in store for themselves, the fund of instruction for the world, when next May the treasures of Dutch art will be gathered in the Venice of the North. There are not a few sanguine spirits who look forward to the possibility of a positive revolution being effected in the tendencies of modern art by the study which will once more be devoted to the creations of the great artists of the Dutch school which have rendered the museums of the Hague and of Amsterdam so famous. Those who have visited the so-called land of dykes and canals will be delighted to see once more the scenes which inspired so nobly the brushes of Hobbema and Ruysdael. Those who have never seen the home of the sturdy people whose story Motley has pictured so vividly, will do well to seize this opportunity of visiting the little kingdom which has carved for itself such a niche in the temple of the world's history. In these days when, with red-brick gables rising in every direction, our country is assuming a semi-Dutch appearance, it is scarcely likely that the younger generation of architects will need much inducement to visit a field so rich in the suggestive motives that fill so characteristically the young artist's sketch-book on a ramble abroad.

Exhibitions seem promised us in every direction. Munich is shortly to hold a fine-art exhibition; a minor exhibition of some interest is to be held in Vienna, in April, when an historical collection of works in bronze is to be shown in the rooms of the Œsterreichisches Museum, and rich collections of the Imperial palaces, the Archduke Albert, Prince Lichstenstein, and the Barons Albert and Nathaniel Rothschild, and many other amateurs will be laid heavily under contribution. Though every one is looking forward with interest to our own Fisheries Exhibition, we are promised for a little later in the year, also in Vienna, an exhibition to report on the progress made in electric science within the last few months, an exhibition which will, doubtless, reveal some interesting discoveries.

Among these will undoubtedly take a place the results of the very successful experiments on the transmission of force by electricity, made only a few days ago at Paris, in the workshops of the Northern of France Railway Company, before a distinguished audience of *savants* and scientific men, among whom may be mentioned M. de Lesseps, a large number of deputies, and, representing England, Mr. Wallis, M.P., and Mr. Tennant, of the Great Northern Railway. M. Deprez, two years ago, at the Munich Exhibition, succeeded in showing, in the face of the prediction of scientific men, that force could only be transmitted over about two miles of wire,—that force of half a horse-power could be transmitted some 35 miles with, it is true, a loss of nearly 40 per cent. With the aid of an entirely new dynamo-electric machine of his own invention, — specially adapted to give the utmost tension with the least possible amount of electricity,—M. Deprez has now been able to show how a machine of five-horse-power was able to transmit half of its force over a distance of about 12 miles. Another experiment with a machine of ten-horse-power showed the distribution of half this quantity of force over a distance of 22 miles. The loss of power is found, no matter what the distance, to be about 50 per cent. Serious as is this loss where steam-power is employed, many an at present unemployed and distant waterfall may become immediately utilisable; the Swiss, indeed, have already turned to account, for the cheap production of the electric light in some of their towns, many of their mountain torrents. The experiments of M. Deprez have, it will be seen, opened up a new field of productive force for the future.

To those who may be interested in any way in the approaching Paris exhibition of the *Salon*, the announcement that the works of art are to be submitted for selection a fortnight earlier than usual this year may be of some importance. Pictures and drawings are to be received from the 5th to the 15th of March; sculpture and engravings from the 21st of March to the 10th of April; and architectural drawings from the 2nd to the 15th of April. Our French neighbours are wise in devoting nearly six weeks to the disposal and arrangement of the vast number of works of art which are likely to be submitted to their attention; while they avoid the crowded disorder of the two days accorded by the Royal Academy for the reception of their works of art by allowing more than a month to the artists to send in their pictures, sculptures, and drawings. But the justest of all their arrangements is that of not permitting more than two works to be sent by each artist for admission.

As we have referred to the annual Paris *Salon*, which, we may remind our readers, is entirely managed by the artists themselves, we may further mention that the Government has now finally decided to hold in September next the first of the triennial series of exhibitions which has been the cause of so much discussion in French artistic circles. These exhibitions will remain entirely outside the influence of the artists in general; they will be essentially governmental, and be composed of a selection of the best pictures from each of the preceding three years' exhibitions.

Whatever may be said for and against competition for artistic purposes, and however ill or little artists may agree to work amicably together whenever the design of an architect has to be completed by the aid of the painter and sculptor, in Paris there exists a thorough unanimity of opinion that without the competitive principle, nothing successful in the way of decorative art can be secured. In this respect they have at least the authority of antiquity, and although so many in England are, it may almost be said, disgusted with the frequent failure of competitive contests, it must be admitted that not only have some very successful instances resulted from competition, but that many men who are now eminent and whose names have become historical in the annals of art, first gained recognition by means of a successful competition. A somewhat important exhibition of competitive designs for the decoration of the town-hall of St. Maur les Fossés is at present open in Paris; the designs exhibited represent, in a most marked manner, the contest which is now raging in France between the realistic and ideal schools of conception and execution. But, notwithstanding this lively antagonism which takes so bitter a form, it is impossible to be blind to the effect that modern modes of study have produced, even on those painters who are most virulent in their abuse of the so-called realistic artists. We sincerely hope, however, and believe that in this competition the older school will carry the day. We cannot allow ourselves for a moment to believe that what is called and well understood as the school of impressionists, whatever may be their future, can ever be allowed to exercise their hasty work on the large wall spaces such as the architects afford to the painters, in continuance of the good old traditions of the past.

Alhambra Theatre.—With reference to a statement in one of our contemporaries that "the difficulties with the insurance companies have now been settled," we are asked to say that such is not the case, but that pending the settlement the directors of the Alhambra have made all necessary financial arrangements, and steps are being taken to rebuild at once. The new theatre (which is expected to be opened in October) is to be of fireproof construction, and will contain every modern improvement for the safety and comfort of the public, especial care being taken to provide very capacious and convenient entrances, corridors, and exits. The architects are Messrs. Perry & Reed.

NEW PARIS.*

THE system of co-operation practised so largely on the Continent enables much of what has been done in new Paris to be accomplished with ease, and all share alike in the benefits. If the so-called "strangers' quarter" in Paris is more brushed, swept, and watered than any other neighbourhood, residence within its limits is not debarred to any one, and its beauties are open to all alike to enjoy, a privilege of which the public freely avail themselves. But in every direction the spirit of improvement is manifest; the new houses erected in the most distant and less favourite quarters of Paris differ but little in quality from those erected in the most central; the statues that the municipality purchase so generously at each year's annual exhibitions are scattered about in the pleasant open green squares of the least stranger-frequented parishes, and the trees that form so grateful a shade in the summer, that relieve so successfully the monotony of the street architecture obligatory in a great centre of population, are as freely planted in the outlying districts as in the more central; for if the whole of Paris cannot be as embowered as the delightful and favoured suburbs of Passy and Auteuil (why was not South Kensington built after the same model?) the humblest dweller in the eighth-floor Mansard attic can enjoy in the hottest summer months the pleasure of a seat under the shade of the healthy plane-trees before his door, and the cool ripple of the little rivulet which runs down each side of the well swept roadway. Paris, indeed, in summer, as Mrs. Browning well said, swims in verdure, and feelingly do the inhabitants express their gratitude for the blessings thus conferred on them by the intelligent co-operation of nature and of art. Never have we heard, as in England, one word against the trees, which science has amply proved, in addition to affording rest to the eye and mind in summer, serve largely to absorb the foul air of the city, and give off purifying oxygen.

In no point has new Paris taken a more vigorous stand than on that of the cleanliness of its thoroughfares, and, sad indeed, in this respect is the condition of the streets of London in comparison with that of those of Paris; and here again our Parisian neighbours show their shrewder knowledge of business, for apart from the increased comfort of existence in dusty summer, sloppy autumn and spring, and snowy winter, it is evident that a large source of wealth is derived from the thrifty use of the refuse and dirt gathered *daily* from every house and square yard of roadway and pavement. That the wear and tear of roads is by this cleanliness reduced is unquestionable. Existence in a civilised city seems occasionally, it must be admitted, to assume the air of a farce in London, when a few days of wet weather have reduced our streets to the condition familiar to every one who knows the metropolis. When it is proved by our French neighbours that, in spite of the busy traffic which, it is alleged, prevents in London the possibility of cleaning the streets, the thoroughfares can be kept in order by their being swept at night by special gangs of *employés*, we must not allow ourselves to listen to those who speak of the difficulties of the question in London. Such indignant letters regarding the condition of our streets as from time to time find their just place in our newspapers would be, and are, unnecessary in Paris. It is singular how many of those little points of detail which so essentially render a great city a metropolis have been considered and carried out in new Paris. Drinking-fountains we, of course, possess in London, though we owe their existence to private generosity; Paris, however, is deficient in the cattle-troughs we owe to the same philanthropic association. We do not yet possess, as Paris and Berlin have both possessed for some time, the excellent institution of *châlets de nécessité* in every large open space. Ample means of communication in our metropolis we should certainly not possess, were it not for the underground railway, while, in comparison with Paris, the organisation of our omnibuses remains a positive disgrace to a wealthy city, and a rich company who do not even seem to have been galvanised into action by the competition of late waged with them by a rival undertaking. The much-vexed question of tramways appears to be giving the Parisians none of the trouble noticeable in

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* See p. 2 0, *ante*.

London, they having, very wisely, altogether discarded the thought of introducing the tram into the highly-frequented thoroughfares, making their termini at such spots as can in no way interfere with the old-established habits of street locomotion. Existence, in fact, in Paris is yearly being robbed of much of that amount of friction which we in England seem merely content to endure, and, in accordance with true British habits, to grumble at.

With so many means of enjoyment as are afforded in Paris to the student, the worker, and the idler alike, well may Paris be willing to be called a city of pleasure. Nowhere can the lounger, the *flâneur*, more easily indulge in his somewhat reprehensible habits, for from morning to night the daily life about him affords him the cheapest means of distraction. On week-days he has always enough to do: in summer military music plays for him in half a dozen of the squares of the capital, and if he is unable to hear the Sunday classical concerts which, for so many years, have been regularly given in the Cirque-d'hîver, the Châtelet, and the Château d'Eau theatres, he can twice a week enjoy the equally refined music of the Garde Républicaine band under the tall trees of the Tuileries gardens, or in the crowded Palais Royal. The museums are open to him to study either the wonders of the industry of the past, or the attitude of the French workman of the present; the rooms of the Hôtel Drouot place gratuitously on view for him the more important sales that are to take place during the forthcoming week; at Saint Cloud and Versailles the fountains play for him; in the summer months the annual *Salon* is open free on the Sundays; the Champs Élysées, the Tuileries, and Luxembourg Gardens are alive with life, and all he has to do is to enjoy himself,—gratis.

Of the numerous other enjoyments, of the theatre, of the music, and of public entertainments generally there is no need to speak, they are even greater features in new Paris than they were in the Paris of the past; the avidity with which all classes appear to crowd the places of amusement in new Paris, as they do in London, and indeed the world over in the present day, certainly indicates either a rapidly-increasing love of enjoyment, or, what is more likely, a growing ability to satisfy its desires.

The shop-windows take, in new Paris, a very conspicuous place; there are very few thoroughfares, if any, in Paris, in which shops are not to be found; it is, indeed, very common for the ground-floor of the *maison de rapport*, or house built to let out in flats, to be utilised for shops, and as in Italy next door to the grandest *palazzo*, a shop will be found in Paris next door to the most stately *hôtel*. Shop-windows, therefore, form in new Paris a very conspicuous feature, and though Paris has long been famous for the skill with which its shop-windows are arranged, the art of the *étalagiste* is carried in new Paris to an even greater pitch of perfection than ever. It is to be regretted that, in certain parts of the city,—those, let it be remarked, to the disgrace of the passing visitors to Paris, chiefly frequented by strangers,—many of the shop-windows still exhibit in shameless publicity works of would-be artistic character, so immodest in their intention and worthless in every way that one wonders not only how tradesmen can be found willing to increase their capital by means so questionable, but that purchasers should be found in a sufficiently large number to keep the trade alive. But if, in respect to what we have referred to, there is very much to condemn, it cannot be denied that new Paris merits in most of its shop-windows the highest praise; such shop-windows are, indeed, not to be found in any other city of Europe.

To the practical builder even, perhaps, more than to the architect, new Paris offers a larger field of inquiry and study: all the great cities of Europe, excepting London, appear perfectly satisfied to make their own modern alterations as much in the spirit of Parisian architecture as can be conveniently adapted to the character of their own cities. Whether, however, the English builder and architect are disposed to recognise the merit of the work done, is a question which they best know; we ourselves cannot but think that new Paris offers many points that we in London and in our other great cities might very successfully study and adapt.

It would be impossible for the professional visitor to Paris, after a pleasant ramble through the metropolis, and more particularly those portions that constitute new Paris, not to admit that we in London have yet something to learn in the matter of urban architecture. A visit to the grandiose neighbourhood of the Parc Monceaux, scarcely yet freed from its scaffold-poles, and the neighbouring *quartier* of the Avenue de Villiers, where the successful painters have erected so many of their picturesque dwellings; a tour through the still progressing area that stretches between the Champs Elysées and the Trocadéro, there as representative of the homes of the wealthier portion of the community; or a visit to any of the outlying districts or the more recently built streets and avenues in the centre of the city, the neighbourhood of the new Hôtel des Postes, the Boulevard St. Germain, the Boulevard Henri Quatre, the Boulevard Haussmann, the Boulevard Malesherbes, or the Avenue de Messine,—a visit to any or all of these representative portions of the French capital will give a stranger a very fair idea of the exterior character of the new metropolis; but it requires the leisure and repose of long acquaintance to fully understand the French capital, and then one discovers how delightfully are mingled in the midst of the whirl of modern life, the traditions of the past and the existence of old Paris, with the many comforts and conveniences afforded to the dweller in new Paris.

THE SANITARY CONDITION OF HOUSES IN THE COUNTRY.

There is probably no truer proverb than the French saying, that it is the first step which is the important one, if we may so paraphrase it; and the fact that public interest in the metropolis, and somewhat to a lesser degree in the large provincial towns, is now aroused upon the subject of sanitary improvements in domestic matters is some guarantee that the hardest days of sanitary reformers are over in the towns. Not that it is time yet to relax any efforts, for there are masses of persons still crassly ignorant and utterly careless of the elements of sanitary science. There can, on the other hand, be little doubt that in provincial towns and in the country districts there is still a great absence of knowledge as to this question. Not only does it exist among owners of large mansions, who, one would expect, would be the first to make sanitary improvements; but it is still more noticeable among the proprietors of small country and provincial town houses, among clergymen, farmers, and other dwellers in rural districts. One reason of this continued neglect of sanitary precautions is the fact that there is so strong a belief in the healthiness of the country, a belief which, however true it may be in itself, becomes nothing more or less than a pitfall, if relied upon as a counteracting agent against the injurious effect of an absence of the elements of proper sanitation. This kind of belief in the value of country air and habitation, as opposed to bad drainage and so forth, may even be found among dwellers in towns, who will relax precautions as soon as they get into the country. There are also other and obvious reasons, just as there are for the fact that in country districts medical science is, in many instances, distinctly behind that of the metropolis and great provincial towns. But the difficulty of impressing country builders and plumbers with the necessity for taking various actual sanitary precautions is quite different from the difficulty of introducing medical improvements. The plumber dislikes and abhors, and has a contempt for the new-fangled ideas; the medical man is only too glad to carry them out if he only had the time and the opportunity for becoming thoroughly acquainted with them. Thus by the combination of various causes there is no doubt that an advance in the knowledge of sanitary principles in the country has not taken place to the same extent as in the great towns.

Yet, as a whole, the improvements which are gradually becoming more common in towns are just the same as are needed in the country. There are only two points upon which there is any considerable difference, one being in respect of the water supply, the other in connexion with the disposal of sewage. In the towns it is simply, as a rule, a question of the best place in which to store water, and the best materials in which to carry it and keep it. But in the country there are not only these points to be considered, but there is the very important one of keeping the water free from contamination either in its inception or in its course to the house. No one with any experience of country houses can doubt that many illnesses are caused by the water being contaminated in a well or during its course from the well. In many houses of a good character in the country, the well which supplies the drinking-water and the cesspool which receives the sewage of the house will be found in such close proximity that the cesspool will at one time or another probably contaminate the well-water. This is a danger which in the towns has less to be considered, but it is one of most vital consequence to any person who owns or lives in a country house. Just as spring is coming upon us, and persons are beginning to think of their country quarters, they should not fail to consider whether or not the water which they use is pure and wholesome. The cause of teetotalism, too, would be greatly benefited if persons interested in it would not only preach the doctrine that water is the best of all drinks, but would do something practical to secure us from being poisoned if we drink it. Again, in regard to the second point, there is no doubt that there are numberless houses with cesspools dangerously close to the dwelling, and that these and foul outside closets are also a cause of much sickness. It is too often supposed that, because one member of a household has alone perished from typhoid fever or diphtheria, therefore the cause of the only individual's illness is not bad sanitary arrangements; but it should always be borne in mind that where one constitution will readily absorb the seeds of disease, other constitutions will prove that they do not suffer, and that in one condition of health a man will pass unscathed through a sanitary ordeal, whilst if he be in another he will quickly succumb. So that the only security which a prudent houseowner can take is to set his house in order, so that the inmates, whether they be robust or weak, will have no health ordeals to pass through.

But there is a distinct practical point in connexion with this subject which needs to be mentioned, and that is, the best means to increase a knowledge of sanitary principles among all classes of dwellers in the country. It seems to us that it is of the first importance that simple and popular lectures treating of the main principles of sanitary science in connexion with houses, and showing how those principles can be carried into practice, should be given in the various provincial towns. Cookery lessons, and lessons to teach ladies how to bind up wounds and make bandages, are now common in country towns, and lectures both to gentlefolk and tradespeople should be given in every town in England. Then there are the medical men, who should point out to their patients how to keep in health, as well as to cure them when they are ill. They will always in this world have plenty of patients, and medical men should take every opportunity of pointing out the main sanitary principles when they get an opportunity. Then there are the clergy, who can be reached in various ways. For example, what could be more wholesome reading for the clergy of England in the *Guardian*, the *Rock*, the *Church Times*, and such-like publications, than a course of papers on domestic sanitation. The subject is one which must be treated and brought forward so as to catch the attention of all classes, not merely of a few isolated individuals, who sensibly turn their attention to the subject. The improvement of the sanitary arrangement of our country houses, great or small, is clearly a matter of pressing importance, and as yet almost untouched.

The Ashpitel Family.—Last week was laid to rest in the old family vault, Anne, eldest daughter of the late William H. Ashpitel, J.P. Her family was one of the oldest and most respected in Hackney. More than one hundred years ago, when her ancestors were living there, Clapton was a delightful country village, with fine old houses surrounded by orchards and pleasure-grounds. At that time it was deemed necessary for travellers to meet together to go from Shoreditch to Hackney for fear of highwaymen who infested the highways. Of the well-known old family of the Ashpitels there are, we believe, but three survivors,—one son, a clergyman in Bedfordshire, one unmarried daughter, and another married to the Rev. W Denton, vicar of St. Bartholomew's, Cripplegate

THE MOSQUES OF CORDOVA AND KAIRWÂN.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary meeting of this Institute, held on Monday evening last, Mr. David Brandon, vice-president, in the chair.

Mr. R. Herbert Carpenter read an interesting paper, entitled "A Comparison between the Mosque - Cathedral of Cordova and some other Contemporary Arabic Buildings." Mr. Carpenter said he proposed in his paper (which was illustrated by numerous plans, sketches, and photographs, to which constant reference was made) to lay before the Institute some information as to the great Mosque-Cathedral of Cordova, and also some remarks upon Seville Cathedral, both buildings having been left undescribed by Mr. Street in his admirable work on Spain. The communication was the result of a recent visit by Mr. Carpenter to the south of Spain and a part of the north coast of Africa. The author complained of the unreliability of the guide-books, even good ones, such as O'Shea's and Murray's, on the subjects in which he had interested himself, conveying as they did altogether dubious impressions. He would, therefore, refer to the mosques at Mecca, Jerusalem, Damascus, and Cairo, with which these authorities compared that at Cordova, and then to the more primitive type, from which, in his own opinion, its plan was really derived, namely, that of Kairwân, in the newly-annexed French province of Tunis. He accordingly began with that of Mecca, graphically recapitulating the current Moslem traditions relative to that mother mosque of the Mahommedan world. Passing thence to Damascus, history taught us that it was the first great city conquered by the Arab invaders, into whose hands it fell about A.D. 634, followed by Jerusalem a very few years later, and by the North African conquests in A.D. 711. The mosque at Damascus was a curious combination of Romano-Christian and Arabic work, and it had never yet been described in such detail as it merited, partly through the peculiar intolerance of its inhabitants. Mr. Hayter Lewis, however, had carefully examined and noted some of its features, and these were briefly alluded to. Originally a great Roman temple stood on the site. In what way this was converted into the Basilica of St. John the Baptist had not yet been clearly made out; but the massive substructure of the western minaret went back to that date, possibly the beginning of the fifth century, or even earlier, and this portion of the mosque might have formed the campanile of the church. At first, after the Arab conquest, the Christian building was divided between Christians and Moslems; but eventually the Caliph Walid required the whole, and rebuilt it, using the older columns and capitals and other materials of both ancient buildings. The new erection was then described. The El Aksah Mosque at Jerusalem was next spoken of; this stood on the site of the church built by Justinian in honour of the Virgin, as the author thought, although he candidly owned that Mr. Fergusson places Justinian's church on another site. A description of it was given, illustrated by a plan enlarged (by permission of the Council of the Palestine Exploration Fund) from the survey of Major Warren. The author now came to the great mosque at Kairwân, which up to the late annexation of Tunis by France was quite as sacred from profanation by the infidels as Mecca itself still is; so much so, indeed, that when Mr. Rae visited it he was quite unable to do more than glance through the doorways into its interior, and when taking some few notes of the exterior was glad to place himself under the protection of a guard of soldiers granted by the Kaid. Notwithstanding all these difficulties, he got at the main features of the mosque with wonderful correctness, as was proved by Mr. Broadley's "Tunis, Past and Present," whose plan, through the kindness of that gentleman's father, Canon Broadley, Mr. Carpenter was allowed to reproduce on the same scale as was adopted in his own plans of the Cordova mosque, and of those of El Aksah and Damascus. The growth of the Kairwân mosque was then described, from its small beginnings, when it was founded by the Emir Okhbah in A.D. 667. Successive rebuildings or enlargements took place in 691, 727, 777, and 827 A.D. The number of columns inside and outside the building had been variously given by various writers. An old Arab record of the eleventh century gave the number as being 500. According to the French plan there were 501. Mr. Broadley stated the number to be 439, while Mr. Rae gave the number as being 435. These columns are of marble, porphyry, granite, and other stones of infinite variety and beauty. The author's account of this prototype prefaced his description of the grand Mosque-Cathedral of Cordova, famous both for its very considerable architectural and artistic merits, and also as being the only survival in Europe of the primitive style of the Moslem places of worship. As already mentioned, the great Moorish invasion of Spain took place in A.D. 711, supplanting the old Gothic kingdom, after its having lasted two centuries and a half. In that year Tarik, the Moorish conqueror, captured Cordova, and converted into a mosque a large part of the church of San Vicente, which stood upon the site of a former temple of Janus, leaving the rest, with their usual generosity, to the Christians, who however, were afterwards brought out at a cost of 44,000*l.*, by the Caliph Abd-el-Rahman in A.D. 786. The architectural details of this building formed the staple of the paper.* Having gone through them, Mr. Carpenter said that, on comparing with each other the different buildings passed in review, it was clear that the Mosque at Mecca formed no guide for any of the rest, either in form or style. The conditions under which it was built were quite peculiar. It was the centre of worship for the Moslem world. The Kaaba and its surroundings marked the place for the faithful, who were at first simply walled in, and were afterwards shut in by covered cloisters, the dimensions of which were again and again enlarged. But at all other cities of the Moslems the Kibleh, or direction of the Kaaba, was the all-important condition to be observed in building a new mosque or in altering an old one. The Kibleh once fixed, what was left was the provision of proper shelter from the sun for the worshippers. When the Arabs established themselves on a new site, the simplest plan they could follow, after fixing the Kibleh, was to build sheds or aisles side by side, surrounded by walls, adding an open walled court for purposes of ablution. At other places some existing building could be made available. But since a church or basilica ran east and west, whilst the Kibleh of a mosque required, when it was north of Mecca, to be south, and in the southern parts of Europe must necessarily be east or south-east, it was only in some places that the basilicas could be altered or adapted to Moslem wants. In other places the basilicas had to be swept away, since the difference in angle between east and south-east made it impossible to make use of them. An exception was made at Constantinople, where the glorious Church of St. Sophia was spared, and the now existing compromise arranged. At Jerusalem and Damascus the south aisle wall of the respective basilicas very conveniently became the Kibleh wall of the mosque, with more or less adaptation of the building in other respects. At Kairwân there was no already existing building to adapt, and Okhbah fixed the Kibleh, it was said, by supernatural help, and built his aisles side by side. The men of Kairwân, having become the conquerors of Spain, found a church already existing at Cordova, but they had to clear it away, as its south wall did not tally with their south-east Kibleh. They accordingly followed their own indigenous type, and kept to it throughout all their rebuilding. And when people, originally from the same Kairwân, under their General Gouher took Fostât, or Old Cairo, in A.D. 973, and founded El Kahirah, the Cairo of the present day, the Mosque of Azhar was founded and completed by that soldier in A.D. 981, on the same general type of the great Mosque of Kairwân. In after centuries it was rebuilt, but the proportion of its original plan was preserved. Thus the Arab historian Makrizi, who wrote in the latter half of the fourteenth century, related that a great earthquake happened in A.D. 1303, which laid the whole in ruins, so that it had to be entirely rebuilt. Of other Cairene mosques, the older one, at Touloun, founded A.D. 679, was more like that of Damascus, and its aisles ran across it, instead of in the Kibleh direction. The Mosque of Hakem resembled that of the Touloun; but the Mosque of Amrou, when rebuilt (as it is now), followed the Kairwân type. Hence the author thought the Mosque of Kairwân most valuable historically, as being the model of buildings in countries so widely apart as Egypt and Spain. The remainder of the paper was devoted to an account of Seville Cathedral, and its relation to the Moorish epoch of Spanish history.

In the discussion which ensued,

Mr. Percival said he had lately visited the mosque at Kairwân, Mr. Broadley being, in all probability, the only other Englishman who had been there before him. Up to the time of the recent French occupation of Kairwân, the city had been entirely isolated from the Christian world for more than 1,100 years. The Jewish traders who came from Susa had to stop two miles outside the city. The few Christians who were allowed to walk through the city by the permission of the Bey, including Lord and Lady Bective, had to be provided with a military escort. Even Mr. Rae had not been able to see the interior of the mosque. As regarded the interest attaching to the mosque from its great antiquity, there could be no doubt whatever that Mr. Carpenter had proved his case. The mosque at Kairwân was undoubtedly the typical mosque, and was certainly one of the oldest mosques in the world. There seemed to be little reason to doubt that, as Mr. Carpenter argued, the Mosque of Cordova was based upon the same design as that of Kairwân. Another point of special interest attaching to the Mosque of Kairwân was that it was a building which had been erected primarily and entirely for use as a mosque; it had not been converted to use from a basilica or any other building, as was the case with Sta. Sophia at Constantinople. He was once at a grand service in the Mosque of Sta. Sophia during the festival of the Ramazan. The interior was brilliantly illuminated with lamps, and the whole of the roof was lighted up with glorious effect. But the whole effect was spoiled if the spectator looked down on to the floor, for the whole of the worshippers stood in lines across the whole of the building, about 3 yards apart; but these lines of worshippers were crooked, or askew with the lines of the building, for they looked towards Mecca. Of the beauty of material in the columns of the mosque at Kairwân it was impossible to speak too highly. Every kind of marble, porphyry, granite, and all kinds of coloured stones, were used with beautiful and varied effect. On entering the mosque the effect at first was disappointing, for going in out of a brilliant sunshine the whole effect appeared to be poor and dull. Making friends with the custodian of the mosque, however, all the doors were opened one by one, and through the doorways a flood of sunshine came in upon the coloured columns, and the effect was magnificent. The visitor very naturally inquired where all these wonderful columns came from. Some were, no doubt, brought from foreign parts, although the country was itself rich in coloured stones. Tunis contained many interesting remains, including a Roman amphitheatre,—the third largest in the world, he believed. There was enough to see, besides the Mosque of Kairwân, to tempt any one visiting Algeria to extend his travels to Tunis.

Mr. Wyatt Papworth moved a vote of thanks to Mr. Carpenter for his interesting paper, and expressed the hope that the Council of the Institute would be able to publish in their "Transactions" all the plans which had been exhibited. Personally he had taken very much interest in the Mosque of Cordova for a great many years, and he thought it was very well known who were the architects of it.

Mr. R. Phené Spiers, in seconding the motion, said he had not seen either the Mosque of Cordova or that at Kairwân, but from the plans exhibited of them he should say that Mr. Carpenter was correct in the conclusions he had drawn, particularly with regard to the Mosque of Kairwân serving as a type for the Mosque of Cordova. Possibly it also served as the type of the mosque of old Cairo, which was supposed to have been founded in the seventh century, although it was doubtful whether any portion of it remained. Of course it was older than the

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* We may mention that a plan of the Mosque of Cordova was published in vol. xxxvii. (1879) of the *Builder*, p. 808. This plan was accompanied by a letter from Mr. Carpenter (p. 807), a previous letter from the same gentleman appearing on p. 582. These letters, together with an article on p. 505, and a letter from Mr. Wyatt Papworth on p. 882 of the same volume, may be usefully referred to in connexion with this abstract of Mr. Carpenter's paper.

Mosque of El Azhar at Cairo, for old Cairo was abandoned on the building of New Cairo.

The Chairman, in putting the motion, said it had not been his good fortune to see any of the mosques mentioned, and therefore he could not, without further consideration, venture to say anything upon the subject. But of one thing he was quite sure, namely, that the meeting would concur with him in thanking Mr. Carpenter for the trouble and pains he had been at in preparing and reading his paper, which was one of very great interest. It was, however, a paper which required to be read and considered carefully and quietly before discussing it. He cordially coincided with the suggestion that the plans with which the paper had been illustrated, or at any rate some of them, should be published in the "Transactions," with one or two views, if possible.

The motion having been carried unanimously, Mr. Carpenter said a few words in acknowledgment, and the meeting terminated.

NOTES ON PROFESSIONAL PRACTICE.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, on the 16th inst., Mr. E. G. Hayes, President, in the chair, the following gentlemen were elected members, viz., Messrs. W. L. Buxton, A. H. Osmond, J. Upton, A. H. Heron, A. Miles, C. W. Piper, F. S. Ogilvie, E. Greenup, H. D. Walton, J. Lord, jun., H. Evans, A. E. Mullins, and F. Swinburne.

Messrs. E. J. Tarver, past-President, and Mr. W. H. Crossland, F.R.I.B.A., were elected members by acclamation.

On the motion of Mr. W. H. Atkin Berry, a vote of thanks was accorded to Mr. Gribble for conducting the members over the new Church of the Oratory at Brompton, as mentioned in our last.

Mr. Arthur J. Gale then read a paper entitled "Some Notes on Professional Practice." Disclaiming any intention to go very deeply into any of the details of the various departments of modern architectural practice, the author proceeded to pass in review some of the circumstances which lead up to and influence that practice, and some of the relations in which the architect stands to his work and his employer. Looking back to the beginning, considering the development and education of the average English practitioner, one of the first questions to arise was, "Of what sort are the young men who join the profession in such numbers, and what education have they received before doing so? In fact, what is the nature of the raw material which is eventually to become the qualified practitioner?" The honourable status which, notwithstanding many failings, the profession undoubtedly held; the more or less lucrative nature of the rewards which awaited success in almost every branch; and, to the devoted student, the undoubted pleasantness of the work in most of its phases, drew to the profession men of all grades in life, and almost all degrees of education. To take, however, an average example, a boy came to the profession fresh from school, with a fair acquaintance, perhaps, with Greek and Latin, one or two modern languages, English (in the comprehensive sense of the term), and a well-grounded acquaintance with mathematics,—the latter of such a nature as to carry him successfully through constructive formulæ and calculations. In addition to these acquirements, it was now becoming increasingly desirable that the young architect should possess an elementary knowledge of physical science in some of its branches. These subjects, in addition to drawing, formed a fair ground-work on which to build the future reputation of the young architect. No doubt a University degree was exceedingly beneficial, as maturing the higher studies (which at school were merely begun), and as giving a tone to one's career which was hardly definable; but it was open to the great objection that its attainment prevented the acquirement, during the most receptive years of one's life, of a vast amount of most valuable detail which could only be learned in the up and down trials of active professional work. But, without going to a University, the young architect might pursue the higher studies referred to, such as physical science, concurrently with the acquirement of all that he could learn from office practice, from sketching, class study, lectures, &c. The opportunities now offered to, and so widely made use of by, students at University and King's Colleges and in the Association, were such that the diligent student, coupling them with the experiences of his pupilage, should have no difficulty in accumulating a large store of useful professional knowledge. Without going into the question of how many practical branches of the profession a man might thoroughly take up without detracting from or destroying his artistic merit, the author held that no man could lay claim to or should hope to hold the highest positions as a practising architect unless he was a thoroughly practical man as well as a true artist. Much damage had been done to the standing of the profession in the eyes of a critical public by the fact that, in matters constructive, many architects relied almost entirely upon the practical knowledge of the quantity surveyor, to whose special department such matters were assumed to belong. One great aid to professional excellence was foreign travel. This was a point fully appreciated by the Americans, and it was noticeable that, as a general rule, those who had attained the most genuine success, both in the amount and quality of their work over there, had studied in the schools of Paris and elsewhere, and had travelled in Italy and other parts of Europe. But supposing that the majority or all of these advantages had been enjoyed, and that the future professional man had completed his articles, and had served a year or two as a junior in a good office, and assuming that practice on his own account was for a time out of the question (the public being slow to trust their commissions to young men), he perhaps obtained an appointment as managing assistant to a man in good general practice. Here the thoroughness with which he had pursued his studies in the past would serve him in good stead, and such a position afforded a practical training of the very best kind. Passing on to notice in detail some of the many phases of modern practice which confronted the man who, having work offered him, and who (having passed the new examination) had joined the ranks of the Institute, and was fairly in a position to start for himself, the author observed that possibly such a one would not have sufficient work to keep him profitably employed for the whole of his time; in such case it was a very usual proceeding (and one which both principal and assistant often found convenient) to arrange for half one's time at one's own work, and half at the principal's office. With regard to competitions, although by their means well-deserved and brilliant successes had been gained, yet, even where there was no jobbery at all, the best design, and that most suited in all respects to the circumstances, did not, in a great many cases, win the day. As the result of a long series of discussions at the Royal Institute of British Architects, a new set of rules for the conduct of architectural competitions had recently been promulgated, in place of those issued in 1872, and things were much better than they were some time ago. In dealing with his first building of any magnitude, the architect would meet with many difficulties. The commission obtained, he would perhaps have to advise upon a choice of site, as to which many points would require consideration. Here (as should always be the case in providing for the wants of a client) careful inquiry should be made as to the present and probable future ways of the household, for on that knowledge would depend the success of the plan. In the *Times'* leading article which commented in favourable terms on the late Mr. Street's presidential address at the Institute, architects as a body were accused of building houses for their clients as if they were all physically, intellectually, and in every way alike. Supposing the preliminary sketches to be approved, the next point was the preparation of the working drawings, and as to these it was in all respects false economy to stint expense, for a good set of drawings, at all points carefully worked out, and a specification full and clear, were better safeguards against "extras" than any amount of provisional sums. Before taking out quantities it was desirable that anything the end and solution of which could not be seen to a small scale, should be settled by larger details, and the specification should be written. It was to be regretted that the specification should be so often left entirely to the quantity-surveyor, for the architect himself must know best what he meant the work to appear and to be in each particular case. It was no answer to this to say that the quantity-surveyor was the more practical man of the two. Why should he be? As far as the author's experience went, he had not found any reason to believe it to be improper or inadvisable that the quantities for his own works should be taken out by the architect or under his eye in his own office. That course ensured careful and reiterated attention to the details. The quantities must, however, if taken out by the architect, certainly be paid for direct by the client. Care should be exercised in selecting builders. The contract form of the Royal Institute of British Architects was generally accepted, but if that form were not used, great care should be exercised in the preparation of the document. The regulation form of words was the best, as their power had been tested and found reliable. The selection of a clerk of works was a difficult point, for he might prove to be unreliable in many ways. He might drink, or connive at builders' dishonesty, or if honest and sober he might be incompetent to perform his duties. An energetic architect's assistant (junior, pupil even, or otherwise) might make a very good clerk of works, especially if gifted with tact and business capacity. The clerk of works should be constantly on the works, and not be kept too much in his office making drawings, nor sent away on errands, if it could be helped. He had quite sufficient to do if he properly attended to his duties, without having the care of matters which were better done in the architect's office. A mistake or "scamping" should be checked as soon as detected, and not allowed to cost the builder unnecessary labour after discovery. An honest builder should be treated with all the consideration that could be shown to him. The architect's appearances in public were few or many, according to the nature of his practice. If he were largely concerned as a witness in legal cases, or as architect to public bodies, his opportunities of proving his aptitude for speaking and thinking quickly and well would be numerous. An appearance in the witness-box, even for a man with a clear case to prove for his clients, and with a habit of saying in a few clear words what he wished to convey, was not a thing to be lightly undertaken. It required a clear head and an entire absence of nervousness and flurry. There were few more pitiable spectacles than a nervous professional witness being "turned inside out" by clever counsel, and they mostly *were* clever counsel who were retained in cases where professional witnesses were called. The professional witness should arrange the evidence he intended to give, and his reasons for giving it, clearly and concisely in his mind, ready to answer on his examination and cross-examination. He should have on paper ready for reference figures and data on all the points of the case, so that he might be prepared to answer any question that was likely to be asked. It should be remembered, however, that there was a limit to the use of written data in the witness-box, and that too frequent reference to them was checked by interference from the opposing counsel, and frequently from the presiding judge, presumably with a view to prevent an untrustworthy witness from showing a good case for his own side by means of a carefully-framed fictitious story. *Sanitation* was a question which, after passing through a long period of neglect, was now coming to the front rank of subjects upon which the architect was expected, not only to know something, but all that it was possible to know. As Mr. Cole-Adams had pointed out in his paper entitled "Barnacles," read last session,* the custom of ignoring the subject as beneath notice could not be too strongly deprecated. In reality, ignorance of the subject was an impediment to success. If sanitary details were left to the builder or clerk of works, they were often again delegated to that enterprising purveyor of bad smells known as the English labourer. The consequences of ignorance or neglect in such matters were often likely to be fatal. In considering the arrangements necessary for the drainage of a house, it was, of course, necessary to ascertain the requirements of local authorities entrusted with the supervision of such work, otherwise they would step in and upset all calculations by their restrictions, many of which were just, although others were exceedingly unjust and foolish, while there was often a great want of unanimity in the regulations of different districts. The voracity of the appetite of local authorities, or their surveyors, in the matter of drawings, was often considerable, extending, as it sometimes did, to the depositing of plans not only of the drainage, but of the buildings entire, including detail drawings and specification! Too great caution and care in the execution of drainage work could not be manifested; if there was any chance offered of mistaking the meaning of the drawings, mistakes would be made. Drains should be finally tested by stopping the lower end and filling with water; and during construction care should be taken to ascertain the correctness of the falls, and the jointing and subsequent clearing of the pipes. The difficulty of deciding upon the respective merits of the various specialities and patented appliances was considerable; one good thing was not suitable for all cases, and the only secret of success seemed to be to become master of the principles, and then to apply them to the peculiar circumstances of particular cases. It was likely that somewhat more would be expected of architects in the future than in the past in the matter of warming appliances. The Smoke Abatement Exhibition must have done good, and if there were not many new things there, and if some of those even were of questionable general utility, there was much of an interesting nature to be gathered from a visit. The present position of affairs with regard to domestic warming seemed to be that the English home demanded an open and visible fire, and had it, but, with it, the disadvantage of utilising only a portion of the latent heat, a great deal of which went up the chimney. Various expedients in the way of reburning the gases, slow combustion, revolving fuel-holders, &c., had been put forward at the South Kensington show, but few, if any of them, seemed to really overcome the difficulty, while some were costly to obtain and complicated to use (the last a fatal objection). We seemed to be on the edge of a step still to be taken, viz., the provision of a fairly-cheap and easily-worked grate which should give the maximum of heat obtainable, and be conveniently regulated, no matter whether it were a coal fire, a gas fire, a fire of anthracite coal, or a combination of gas and coke, so long as it was an open fire. The great question of *ventilation*, in its relation to warming both public and private buildings, was too large to be entered upon in such a paper as the present; but it might be said that while ventilation with a warming apparatus for public buildings was comparatively easy, though by no means always done well, it was quite certain that domestic ventilation had long been at a standstill, and was very capable of improvement. Should not architects lead the way in the matter? An acquaintance with the sources and quality of *water supply*, the difficulties likely to arise in special cases, means of contamination, storage, &c., was too well known to be essential to render it necessary for the author to dilate upon it. *Damp* in buildings was frequently more troublesome and difficult to remedy than many other annoyances. Mr. Ewan Christian's remarks* at a meeting of the Association last year dealt somewhat fully with the matter. Estimation beforehand of the depth at different seasons (and the amount) of the ground-water below the surface was a point requiring careful attention. Inattention to it, and to the kindred one of soil and site, might result only in discomfort to the occupants; but, on the other hand, failure of the foundation, and, by consequence, failure of the whole building, might ensue. *Dilapidations* claimed frequent attention from the professional man. In most cases the repairs due or desirable year by year had, except those specially and by name provided in the lease, been left till the end of the term, and their evil consequences had become the more disastrous. What was, and what was not, fair wear and tear; identification of the original state of the premises; the best way to cope with a failure in construction, so as to do justice both to lessor and lessee,—all these difficulties would arise for settlement, and the work required would have to be priced out in detail, and a total amount settled as a fair claim. Nothing was so helpful to the architect in work of this kind as sound knowledge acquired by previous thoroughness in study and practical knowledge of the carrying-out of buildings. Having briefly referred to questions affecting the management of building estates, Mr. Gale observed that it behoved an architect, when acting for a public body or company, carefully to see that his instructions to act, were in due form and entered on the minutes of the Board meeting at which the appointment was made. Incorporated bodies could contract under seal only. The question of the ownership of drawings had never been settled in a final and satisfactory way. The fairest view of the matter seemed to be that the drawings were merely the vehicle by which the architect provided the client with the building he wanted. The majority of the drawings could be of no real use to the client; legally, however, they must be given up if asked for. With regard to professional charges, the schedule of the Royal Institute of British Architects is generally accepted, and might be followed fairly enough. A good method, if one's charges could hardly be assessed on the Institute schedule, was to keep account of the time occupied on a client's work, and to total-up and price the same at some fair remuneration per hour or per day, according to circumstances or custom. Specialism, or the development of a host of specialists, had been much talked of lately, and there was much advantage to be gained by the profession at large from the special attention of different men to different subjects. It had, however, its dangers. Architects could not, any of them, neglect general knowledge for the study of a speciality, as that would prove a fatal error. It would, however, be of advantage that the profession should be self-contained, and not be invaded by a number of outside men who, in various subjects now-a-days, were reaping the benefits of carelessness and want of knowledge on the part of architects. *Valuations* might be taken as an example of the subjects of which it was necessary for all architects to have at least a general knowledge. With regard to the relations of the architect to the solicitor, the latter had many chances of placing work in the hands of the former, and the young practitioner with several friendly solicitors to give him work need not fear starvation if he were worth his salt. In light and air cases the surveyor was expected to bring to bear a special knowledge of the requirements of various buildings as to light, and an understanding of the principles and practice of the law of easements. It was somewhat unusual for any but men of large experience in this particular direction to be engaged upon light and air cases, since a long and distinguished professional record assisted more than anything else to gain for a witness such a hearing as would tell favourably for his client's case. Still, the younger members of the profession must be fully acquainted with the theory upon which both the physical and legal aspects of the case were founded. The subject was now engaging the attention of the Council of the Royal Institute of British Architects. In conclusion, the author referred to the conduct of arbitrations.

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* See *Builder*, vol. xli., pp. 759, 800.

In the discussion which followed,

The Chairman said Mr. Gale had read a very comprehensive paper, touching as it did upon almost all the important matters with which architects had to deal in professional work. Of course some of the qualifications of a thoroughly practical architect were only to be acquired by actual experience and practice. Perhaps, however, Mr. Gale's suggestion as to the employment of pupils as clerks of works was a little premature. A pupil who was out of his time might, no doubt, in many cases, efficiently perform the duties of a clerk of the works. The position held by a clerk of the works was a very responsible one, calling for a good knowledge of building materials and an accurate knowledge of the ways of putting them together. He was glad to see Professor Kerr present as a visitor. Perhaps he would favour the meeting with a few remarks.

Professor Kerr said he always felt very much pleasure in attending the meetings of the Association, and to contribute what little he could to the instruction of the evening. He had listened to Mr. Gale's paper with very great satisfaction indeed; the range of subjects which it had touched upon was very large, and although it was impossible within the limits of a paper to treat all or any of them with minuteness, yet Mr. Gale had successfully called attention to a number of matters which required anxious thought and consideration on the part of those just entering upon the work of the profession. The point to which the Chairman had referred, viz., the employment of architects' pupils as clerks of works, was a very important one, and one well worthy of further consideration. In these days, when the architectural profession was extending itself in respect to numbers so very largely, and when the amount of work to be done was not extending itself in precisely the same proportion, he held it to be the duty of all those who wished well to the profession to promote the cultivation by all possible means of all kinds of architectural knowledge and employment. He was happy to see that in many ways architects were pushing themselves into fields of exercise which formerly were closed against them. With regard to the particular field of operation which was connected with the duties of a clerk of works, the case seemed to be this:—Nothing could be more valuable, educationally, to the young architect than the exercise of the duties of a clerk of works. At the same time, however, he must be competent to exercise those duties. What a clerk of works had to do on average works was to interpret the architect's drawings for the builder or the builder's foreman; this work the builder and his foreman were not, as a rule, quite so able to do as might be supposed. The clerk of works had also to watch over the client's interest in regard to several matters, such as the quality of the materials, the nature of the workmanship, and, generally, the performance of the work judiciously and well with the avoidance of "extras." Now, of course, the young architect was not able to take all that responsible work on his hands at once. But the young man who had passed through his apprenticeship, and who desired to pass a year or so on practical works, could not do better than to go as a clerk of works. Architects were not, as a rule, sufficiently alive to the necessity of sending out their pupils to inspect works in progress. Such neglect was not intentional or selfish. Now, a young man who adopts architecture as a business, to put it plainly, ought to be sent out to see how building work was executed; he ought to be permitted to pick up what knowledge he could out of the office as well as in the office. It was quite true that sometimes young men in architects' offices, when they had an opportunity afforded them of seeing works in progress, did not use it. The pleasant work of drawing in the office was often preferred. There was one other question touched upon in the paper, as to which he should like to say a few words, viz., the relations of architects with lawyers. Now, it unfortunately happened that in this country at the present moment the lawyers were increasing in numbers to a most alarming extent; and inasmuch as lawyers would live, whoever starved, it followed that disputes were increasing in number and in inveterate bitterness. No misunderstanding, it appeared to him, could possibly arise now but it was converted into a bitter quarrel. He wished to speak with all respect of the legal profession, which no doubt had its traditions; but it certainly did seem to him that for the administration of justice in building matters the system of litigation under which the architectural profession at present groaned was very much of a failure. As architects all knew, even the very youngest of them, there was something about bricks and mortar that lawyers could not understand: they never got at it by any chance. A solicitor who was very much interested in his client's position might, after taking a little trouble, possess himself of some vague knowledge of what the dispute was all about; but as to the barristers, they never succeeded in obtaining the faintest glimmer. As he always told them, "You deal with words, and not things; you deal in abstractions, and there are no abstractions in bricks and mortar." Now he wished to say that, in his opinion, all building disputes ought to be settled by architects,—the lawyers ought never to be allowed to come in at all. He said that advisedly. He had been concerned in a great many cases of litigation for a great many years, and he never knew a building dispute settled in a court of law except on a false issue. The way it was done was this: the business of the opposing counsel was to mystify the judge; the business of the judge was to find his way by hook or by crook. They never believed the word of any of the professional witnesses, because they did not understand what they meant, and the easiest way out of a state of total utter darkness was to disbelieve. The process was perfectly simple. One counsel raised persistently one false issue; the other counsel raised with equal persistency another false issue; and the judge raised a third. When, on the other hand, a building dispute was referred to an architect or surveyor, even though he were only a man in moderate practice, albeit a man of experience, the process, although irksome and tedious, was more satisfactory, and far less expensive, for such disputes were made unnecessarily expensive by the intervention of the lawyers. The arbitrator heard both sides of the case patiently, and gave his decision on practical grounds. Such decisions very frequently consisted in splitting the difference and dividing the costs. That was a thing which the lawyers never did. They must always have one man altogether in the right and the other man altogether in the wrong. It should be borne in mind that the truth was to be found between extremes. In conclusion, Professor Kerr said he thought the time had come when the architectural profession,—which was becoming a very important and highly-regarded profession,—ought to take seriously into consideration the way to manage building disputes without the serious litigation which was the bane of this country. It was a question which ought to be taken up by the Institute; but, when he compared the questions which the Institute and the Association had respectively taken up, and found that the Association had been perhaps quite as successful in obtaining its ends as the Institute had been, he saw no reason why the Association should not take up this question, although in a quiet and unambitious way, with the view of leading the Institute to take it up hereafter. The matter was an exceedingly important one, for building disputes would arise, and they ought to be settled as speedily and as cheaply as possible.

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* See *Builder*, vol. xlii., p. 158.

Mr. J. Osborne Smith, in moving a vote of thanks to Mr. Gale, deprecated the suggestion of employing pupils as clerks of works. He agreed fully with the necessity which existed for architects to be thorough masters of the sanitary details of their buildings, for his experience of the so-called sanitarian specialists was that they were most impracticable men.

Mr. S. Flint Clarkson, in seconding the vote of thanks, was of opinion that "architect and surveyor" was the correct designation for a man who fulfilled the almost cyclopædic duties enumerated in Mr. Gale's paper as coming within the scope of professional practice.

Mr. F. W. Farrow, in supporting the motion, suggested that the legal difficulty as to the ownership of drawings might generally be compromised by the architect giving his client a plan of the building, showing all drainage arrangements, &c., with, possibly, in addition, a small perspective view.

A Member, whose name did not transpire, expressed his concurrence with the stress which had been laid upon the importance to architects of a thorough knowledge of sanitary matters, so that they might do their own sanitary work without calling in the services of the expensive sanitary engineers, or the plumbers who were so fond of using that designation.

The Chairman having put the motion, Mr. Gale said a few words in reply, and the meeting terminated.

ST. KEW CHURCH.

The restoration of this church, which is one of the finest in Cornwall, is approaching completion. It has been undertaken under the direction of Messrs. Hine & Odgers, Plymouth, and the contractor is Mr. Bone, of Liskeard. The church consists of nave, north and south aisles, chancel with side chapels, a lofty tower at the west end, and a south porch. Originally the structure was unusually rich in carved Perpendicular timber work, but little has been allowed to remain except in the roofs, which are all of the wagon type with carved ribs and cornices, the former bossed at the intersections and with angels at the feet. All these parts in modern times had been periodically coated with yellow wash, and the plain panelled spaces whitelimed. Wood has taken the place of plaster in these spaces, and the carved roof-work has been cleaned and repaired, and the bosses and angels in the chancel have been richly illuminated as they were of old, and in keeping with one decorated figure, which was discovered in the progress of the works, and which has been reset in its original position. All plaster has been removed from the internal surfaces of the walls, and the masonry pointed throughout. The granite arcades and dressings have been cleaned and repaired, but the ancient tool-marks have not been interfered with. A lofty screen of oak, richly traceried, will divide the chancel and chapels from the nave and aisles, and there will be parcloses between the chancel and the chapels. A piece of the ancient screen which had escaped destruction, and which has been worked in, served the architects as a key to the elaborate details necessary for the new screen-work.

Permanent oak seats with carved ends, corresponding with one or two existing old ones, occupy the eastern portion only of the nave. Under these and the chairs, in other parts, the floor will be of wood blocks, laid herring-bone fashion. The choir-stalls, of oak, are traceried and carved from the architects' design. The stall-ends terminate with figures of angels in adoration.

In the east window of the north chapel were numerous fragments of old painted glass, so covered with dirt that nothing could be made of the subjects; and besides, there was a box full of other pieces. These were all entrusted by the architects to Messrs. Fouracre & Watson, stained-glass artists, who have put the pieces together, and successfully deciphered the subjects. The result is a most beautiful and almost perfect window of the fifteenth century, illustrating the life of Christ. Some small parts of the canopies and a few of the inscriptions are alone missing. The legends which remain are in very curious English:—

"Here owr Lord rydyth ynto Iherlm."
"Here a: washyth hys dicypylys fete."
"Here a: prayyth to the fader:"
"Here O: Lord ys skorgyd."
". . . . . . byfore pylat."

The date of the window is 1469, as shown by an existing entry referring to it in the accounts of the mayor and churchwardens of the neighbouring town of Bodmin.

In another part of the church are remains of a fine "Jesse" window.

The church plate of St. Kew is almost of unique interest and include a hanap or chalice, of English manufacture, of the date 1598. It is of great size, and is a fine specimen of Renaissance work in silver.

In the restoration of this church the Archbishop-designate of Canterbury has taken great interest.

NORTHERN ARCHITECTURAL ASSOCIATION.

The quarterly meeting of the Northern Architectural Association was held on Tuesday, February 20th, in the Old Castle, the president, Mr. John Tillman, of Sunderland, in the chair. There was a good attendance. Mr. Oliver moved: "That the general rules of the Royal Institute of British Architects for the regulation of architectural competitions be adopted by the Northern Architectural Association, and that printed copies of the same be distributed by the secretary." He said it was pretty well known that the Corporation were about to erect several extensive blocks of buildings in various parts of the city, and that they had volunteered the information that the designing of these should be submitted to public competition. He (Mr. Oliver) being a member of the Corporation could not, of course, become a competitor, but he hoped to be of service in conjunction with both bodies, viz., the Corporation and the Architectural Association. He believed Mr. Laws, the City Engineer, entered heartily into the recommendations of the Council, and, so far as he had been able to learn, every member of the several committees wished to carry out the resolution of October, 1881. The Royal Institute of British Architects, he continued, had given years of attention to the question of competition, and it was one of the great art institutions of the country. He thought they could not do better than adopt their general rules, which fairly met the mere architectural adventurer and gave the balance of influence to the honourable practitioner, at the same time securing the interests of the public. Mr. Oliver concluded by saying that he believed the Council wished to do justice to the architectural profession, and that the legitimate members of that profession were most anxious to do justice to the works entrusted to them, and expressed a hope that the working out of the new *régime* would result in improved art culture, both in the profession and in the public.

This was seconded and carried.

Mr. Newcombe proposed that a copy of the general rules be forwarded to each member of the Newcastle and Sunderland Corporations, with a request that they would give them their best consideration, and adopt them in any architectural competitions they may decide to invite.

After an animated discussion the resolution was carried, and the meeting terminated.

STONE OF WESTMINSTER ABBEY.

The following memorial has been forwarded by the Duke of Westminster to the Home Secretary on the subject of the injury done to public buildings in Westminster by the excessive emission of smoke, especially to Westminster Abbey and the Houses of Parliament, urging a stricter enforcement of the provisions of the existing law, which are believed to be adequate for the suppression of much of the existing nuisance from the potteries. The memorial was adopted at a meeting of the Council of the Smoke Abatement Institute, on the motion of Mr. Ernest Hart, seconded by Lord Algernon Percy, M.P.

Sir,—The undersigned memorialists, members of the Council of the Smoke Abatement Institution, and others, are desirous of respectfully calling your attention to the evils attending the excessive emission of smoke and other noxious vapours from furnaces connected with factories and workshops in the metropolis, and especially those connected with various potteries in the district of Lambeth.

Notwithstanding the serious injury to the Houses of Parliament, Westminster Abbey, and other buildings, which must arise from this cause, and of which recent evidence has been adduced, your memorialists have seen with regret that not even the powers of the existing Acts of Parliament passed to restrain this nuisance, are fully exercised.

By the Smoke Nuisance (Metropolis) Act, 1853, and the Amended Act of 1858, expressly including potteries, it is enacted that "the best practicable means for preventing or counteracting smoke" shall be adopted, and that any person in charge of a furnace who shall so negligently use such furnace as to cause a nuisance, shall, upon summary conviction for such an offence forfeit and pay a sum not more than 5*l*., nor less than 40s.; and upon a second conviction for such offence the sum of 10*l*., and for each subsequent conviction the sum of double the amount of the penalty imposed for the preceding conviction.

Nevertheless, in several cases recently tried before the magistrate sitting at the Lambeth Police Court, the prosecutions having been instituted in pursuance of the provisions of the Act, and the offences proved and convictions obtained, merely nominal fines varying from 2s. 6d. to 10s. have been inflicted. In some of these instances former convictions had been obtained.

In some other parts of the metropolis similar leniency had been shown to offenders against these Acts, and the objects of the Legislature have been defeated.

Your memorialists believe that investigation will satisfy you that these industries may be, and are elsewhere being carried on without excessive production of smoke.

Your memorialists pray,—

That you will cause investigation to be made of the circumstances here alleged, and that you will take such steps as may seem best to you to cause the Smoke Nuisance (Metropolis) Acts to be effectively carried out throughout London.

THE LATE MR. WM. SNOOKE.

We announce with regret the death, on the 18th instant, of Mr. William Snooke, of the firm of Snooke & Stock, of Duke-street, London Bridge. Mr. Snooke, although calling himself an architect and surveyor, devoted most of his attention to the surveying part of his business, his partner, Mr. Stock, carrying out the architectural portion of the practice of the firm. Mr. Snooke was a man of great integrity and ability, and was much respected by all who knew him. His warm and impulsive nature sometimes brought him in conflict with opponents, but his sympathies were always on the side of the weak and the oppressed, and probably not many men made so few enemies.

Mr. Snooke held the appointment of District Surveyor of Rotherhithe and Hatcham, with a part of Camberwell, since 1847. The gross annual value of the district, as appears from the last return, is about 900*l*.

The Improved Wood Pavement Company (Limited).—The Directors' report, presented to the shareholders at the eleventh ordinary general meeting, held at the Cannon-street Hotel, on the 12th inst., stated that after making proper allowance for depreciation of plant, machinery, &c., the accounts show a balance of net profit of 5,526*l*. 19s. 5d., from which the directors proposed to pay the usual dividend of 5 per cent., which will absorb 4,112*l*., carrying the balance 1,414*l*. 19s. 5d. to "reserve fund," which would then stand at 7,964*l*. 13s. 6d. The directors are giving attention to private wood-paving works of all kinds, as also to the employment of the machinery for the trade. The report was adopted, and a dividend declared as recommended.

FILLONGLEY.

THE village and parish church of Fillongley, in the county of Warwick, stand upon the direct and ancient road between Coventry and Tamworth, six miles to the north-west of the former city. Here are the remains of two residences, indicated in the Ordnance Survey as "Castle Hill" and "Castle Yard," the term "castle" being applied, indiscriminately, to both. Castle Hill stands half a mile north-north-east of the church, Castle Yard a quarter of a mile south of it. Both remains are of the military type, and represent defensive works of very different ages and fashions.*

CASTLE HILL, much the older of the two, stands upon ground sloping gently towards the north-west and west, between two brooklets which, descending from the north-east and north-west, from two sides of a triangle, the apex of which, their point of junction, lies to the west. The ground is thus protected on three sides, and towards the north, where the brook lies in a small but deep valley, it has cut for itself a deep channel in the soft red sandstone rock, the protection afforded by which is considerable. On the whole, in a country presenting no very marked features, the position may be said to be well selected.

The earthwork, which bears the name of "the Castle," is somewhat of an oval form, about 180 ft. north and south, by 150 ft. east and west. It is enclosed within a ditch of variable depth and breadth, from 15 ft. to 20 ft. in breadth, and 6 ft. in depth on the southern or most exposed side, to 3 ft. and 4 ft. on the west. Towards the north the ditch is superseded, or nearly so, by a steep slope, falling towards the brook. The contents of the ditch have been thrown inwards to form a bank, which, therefore, is highest and broadest, or about 6 ft. by 20 ft. on the southern face, and is altogether, or very nearly, absent on the northern face. The entrance seems to have been on the north-east quarter, where the ditch is traversed by a causeway of earth, and the river bank cut through. It is probable that this principal work was covered by an exterior bank and ditch to the east and south, for to the west, about seventy or eighty yards beyond the ditch, are the traces of a scraped slope, cutting off the point of the triangle towards the union of the brooks. This was suited to the falling ground. To the south a bank and ditch would be necessary.

Beyond the north brook, a few yards from the earthwork, is a fragment of masonry, connected with a number of loose stones. These have been supposed a part of a castle in masonry, but more probably here was a small mill, and this a part of a dam to keep back the water of the brook. Probably the whole are the remains of a comparatively modern arrangement.

From the character and position of this earthwork it is evident that it is not Roman, and almost equally probable that it is not British. It is too small to have belonged to a tribe, and looks as though it had been the residence of a landowner of the seventh or eighth century who here resided with his family and dependents upon his or their private estate. So far as can be inferred, works of this character mark the fortified house, the *domus defensabilis*, of some early Saxon settler, before the period when the moated mound came into use, or when, for some special reason, it was not employed. Well palisaded round the inner circle, and protected in a similar, though probably less complete fashion, round the outer enclosure, such a work would afford a very fair shelter for the family within the circle, and for the tenants and cattle within the outer court.

THE CASTLE YARD.

This is of a very different character from the earthwork already described, of much later date, and with defences of a different type. This, however, is posted in a similar position to the former work, occupying a small triangle of land formed by the beds and junction of two brooks which flow down from the south and the south-east to meet and form the point of the triangle to the north.

In the space thus protected towards the north, west, and east, was constructed a rudely oval shell of masonry about 50 ft. east and west by 80 ft. north and south, traces of which are seen in five masses of stone rubble-work, of which four are overthrown and a fifth remains in its proper place. A light ridge connects these detached masses, and indicates the line of the curtain of which they formed a part. The fragment standing in its place seems to have been connected with a curved recess, or, perhaps, a well stair, but the others have been overthrown by gunpowder. The whole was on a small scale, and there are no visible traces of towers or gate-house. The earth and rubbish heaped up in the interior of the area may cover foundations, and, no doubt, a light excavation here would disclose the plan of the whole structure and the place of the entrance, which, probably, was towards the east.

Outside the walled area the ground falls slightly, and there are traces at about 30 yards' distance, towards the south, of a ditch and internal bank protecting this, by nature, the weakest side. The valley towards the east is occupied by one of the brooks which flows a few feet only from and below the wall. There is no trace of any second or outer circle of masonry, so that probably the castle was composed of a single ring wall, possibly set with turrets, but if so, of no great size.

The whole castle must have been a very inconsiderable place, though from the steepness of the little valleys between which it stands, and the marshy character of the ground watered by the brooks, it evidently possessed much passive strength, and if garrisoned by determined men, could have held out for some time.

Fillongley is unnoticed in any record older than the Conqueror's Survey. We learn from Domesday that "Filungelei" contained two hides of land, of which one half hide belonged to the Bishop of Coutances, and was held by Lewin; a second by the monks of Coventry; a third by a certain Alsi, who held it from before the Conquest; and a fourth by Robert le Despenser, which, though of less value, contained the church. Alsi may have resided upon the Castle hill. The half hide held by the monks is identified with Old Fillongley, on the western side of the parish, and was held of them in the reign of Henry III. by Gerard de Alspath, whose name is preserved in Alspath Hall, in the south-west quarter of the parish. He held it as a fourth part of a knight's fee. A part of this holding passed in some way from the ownership of the monks, who, in the time of Edward III., held in it one-eighth of a fee of Lord Hastings. Part of Le Despenser's share passed to the Marmions, and thence, it would seem, to the Earls of Leicester, one of whom probably enfeoffed of it either Walter or Hugh de Hastings, one of the earlier members of that family, who long continued to hold it of the Marmions and Le Despensers. Thus the family of Hastings were of Fillongley in the reign of Henry I., and it speedily became their chief residence in Warwickshire, and the nucleus of a considerable estate. With the church was the advowson which, in the reign of Edward III., Lawrence Hastings, Earl of Pembroke, sold to Clinton, Earl of Huntingdon. Fillongley, though it appears in the inquisitions of the Hastings family, is not mentioned as a castle, being, in fact, too inconsiderable to be claimed by the crown, and so entered upon the public records, but it seems to have remained the chief, if not the only, residence of the family, until Henry de Hastings, in the reign of Henry III., married Joan de Cantelupe, who became a very great heiress, so that John, their son, inheriting the Castle of Abergavenny, resided there, as did occasionally his descendants. On the death of the last Hastings, Earl of Pembroke, Fillongley passed with much of his property to the Beauchamps, and so to the Nevilles, who held it when Dugdale wrote his very valuable history.

Fillongley Church contains no monuments of the Hastings family, who buried at Polesworth and with the Grey Friars at Coventry.

G. T. C.

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[*] See plans, p. 244.

Electric Lighting and Ballet-Girls.—The ballet at the Princess's Theatre, Manchester, in which twenty-six ladies take part, has for the past month been danced nightly by the light of small Swan lamps placed in a flower on each lady's head. The current is supplied by a small battery, the weight of which is about 1¼ lb., carried on the back of the dancer, as at the Savoy Theatre. None of the ladies are at all frightened; in fact, they like it so much that the principal dancer, Miss A. Holt, has arranged to have her dress covered with the lamps, which will be done ere this is in print. The arrangements have been carried out by Mr. H. Bury, of 46, Market-street, Manchester.—*Electrician.*

CROXALL MOUND.

THE parish church of Croxall stands upon the east or right bank of the Mease, a few feet above its flood level, and about a mile above its junction with the Trent. The Trent, but a few yards higher up, has received the waters of the Tame, each river traversing a broad and flat valley, subject to extensive inundations. In former days, before the land was enclosed or the water-courses kept clear of obstructions, this low and wet tract must have presented an almost impassable barrier, protecting the eastern villages from attacks upon the western or British side.

Of the origin of Croxall nothing whatever is known. Crux or Croc may be the British Crûq or Cric, as in Crickhowall, or there may have been preserved here one of those fragments of the true Cross which were at one time rather freely scattered and believed in, and of one of which Crosston is thought to preserve the memory. "All" is probably the Saxon Hall or "Aula" of the early proprietor. Domesday is silent as to the parish and church, naming only the manor. No doubt the manor or private estate is older than the parish, which, however, may date from the middle of the tenth century; but the church may well be much older, and may have been attached to the original residence of the English lord, and so not greatly later than the establishment of private property in land, and the introduction of Christianity. The Mease is at this time here the boundary between the shires of Derby and Stafford, the church and most of the parish lying in the former; one hamlet, however, lies beyond the stream, in Staffordshire, so that the limits of the parish are probably older than those of the shire.

Croxall is fortunate in having become the subject of a local history. Mr. Ussher's recent and richly-illustrated quarto dives deeply into the descent of the property, and is copious upon the pedigree and heraldry of the lords of the soil, their residences while living, and their sepulchral memorials when dead. He gives copies of their principal muniments, settlements, wills, and inquisitions, large extracts from the parish registers, particulars of the church architecture, plate, and bells, and lists of names of places and of public ways, accompanied by local surveys, together with copies of the tombstones of the humbler forefathers of the parish. Altogether, the volume gives a very full and particular, and, as it is believed, a fairly correct account of this very interesting parish.

The text of the present remarks is the only notable object in Croxall upon which Mr. Ussher has but little to say, and yet it is without doubt older than any other work of man within the parish, and probably older than the parish itself, and as old as the manor or the appropriation of the estate. This object is a small and mutilated, but still distinct, moated mound, which stands on the immediate bank of the Mease, due south-east of the church, and upon the margin of the churchyard. Mr. Usher gives its height as 12 ft., and its circumference as 40 yards. Both dimensions are liberal. The mound stands on the convex side of a bend of the river, and its adjacent or south-west face slopes directly towards the water, rendering a ditch at that point unnecessary. Towards the north the ditch has been, more or less, recently filled up, probably to allow of the carting away of the substance of the mound, which has been cruelly dealt with on this side, reducing the remainder to a crescent in plan, and evidently deducting not a little from its original height. On each side, however, towards the east and west, the ditch is tolerably perfect, and runs out upon the slope as it approaches the river. It is abundantly evident that this has been a moated mound, the moat encircling it on three sides, and giving place to the river on the fourth.

The court, also banked and moated, usually attached to these mounds, if it existed here, must have been placed to the north or east. The ground in each direction is rugged and irregular, and at one point, to the north, bordering on the high road, are traces of what seems to have been a bank and a ditch. Towards the east the ground is still more disturbed. It is said the village once stood in this direction, and that the surface irregularities belong to its foundations. Here, also, it is said, was the camp of a large body of soldiers brought by Henrietta-Maria to reinforce her husband's army in 1643. However this may be, the aspect of the mound, its ditch, and its position near the church, all point to its having been a motte or burh, such as the Lady of the Mercians threw up at Tamworth in 913, and of which the not distant parish of Sekington presents a very fine example.

It appears, however, that, when opened in 1800, human bones were here found. Had these remains been contained in an urn or cyst, showing that they were of the age of the tumulus, or lain in such a position as to show that the earthen heap was cast up over them, its sepulchral origin would have been clear, but there is no evidence of this kind. For all that is recorded it may have been that the interment was of a date long subsequently to the mound, and connected with the contiguous churchyard. To judge from present appearances, this mound was the site of the timber residence of some Saxon lord of the soil, probably the same, or the descendant of the same, who founded the church and acquired and constituted the estate or manor. G. T. C.

HOUSE AT FINCHLEY.

This house, which is now nearly finished, is being built in Nether-street, Church-end, Finchley, for Miss T. M. Boulton.

The facing bricks are red Bracknell, with Portland stone dressings, and the roofs are covered with dark-coloured Broseley tiles and with Cooper's ridges and finials.

The internal joinery on the ground and first floors is in polished pitch pine, the ground-floor doors having moulded heads. The principal staircase, which is constructed with close strings and newels, is of polished pitch pine, with teak newels, handrails, and mouldings.

The outer strings of this staircase have handsomely-carved pateræ in sunk panels.

The ceiling of the staircase is panelled in pitch pine, with moulded ribs, and the entrance-hall is paved with ornamental tiles.

The stained glass throughout has been successfully done by Mr. Brunton, of Hurley-road, Kennington.

The building has been carried out by Mr. William Goodman, of Hartham Works, Holloway, his contract for the same being 2,699*l.*, from the drawings and under the superintendence of the architect, Mr. Thos. Newell, of Dashwood House, New Broad-street.

THE NEW STADTTHEATER, BRÜNN.

This new theatre, the opening of which took place at the end of last year, possesses features entitling it to a more than passing notice. For example, it was one of the first theatres lighted throughout by electricity. In 1870 the old Brünn theatre, of very modest dimensions, was burnt down for the fourth time,* and it was some time before a beginning was made in rebuilding it. When the matter was once taken in hand, however, under the energetic direction of Bürgermeister Winterholler, the preliminary works were soon completed, and the design of Herren Hellmer and Fellner, architects, was selected for execution. Building operations began on the 18th of July, 1881, and on the 31st of October, 1882, the theatre was finished, at a total expense of not more than 50,000*l.*

The new theatre has the advantage of being built on a slightly rising site, and perfectly isolated, the nearest buildings being at least 50 ft. away from it. It is erected in the style of the Italian Renaissance. The principal front is its chief feature. Upon a balcony resting on pillars, and serving as an approach, rises a pediment supported by six Corinthian columns, which in its turn is surmounted by a semicircular pediment, over which beams the figure of Music, flanked by genii. In the great pediment is represented the triumphal progress of Dionysos, accompanied by the muses representing dramatic art, whilst reliefs between the columns and reclining allegoric figures over the windows point to the artistic destination of the building. All the statuary, both outside and inside the theatre, is executed from designs by the sculptor Friedel, of Vienna; the other sculptural work is by the sculptor Schönthaler. Building operations were superintended by the architect Nebehosteny, of Vienna.

The interior of the theatre is elaborately decorated in the baroque style. This is apparent already in the vestibule, to which access from the street is gained by seven entrances. The staircase forms one of the chief points of attraction. A display of statuary and arabesques, the spiral forms of stairs* and balusters, and the rich ornamentation of the consoles in the loggias create an impression which may be described as expectant. The auditorium, by the mild light supplied by glow lamps, offers an harmonious and tasteful view. The faces of the boxes and galleries are white, picked out with gold, whilst the background and draperies of the boxes, as well as the cushions of the seats, are of crimson hue. Where the horseshoe form of tiers passes into the circle of the ceiling, six frescoes have been introduced. Finally, the artistically executed curtain, by Leffler, forms a fitting conclusion to the harmonious whole. Sitting-room was at first provided for 1,500 persons, but since the destruction of the Vienna Ringtheater, that number has been reduced to 1,360, the space thus gained being utilised in providing greater facility for egress.

An important feature of the theatre is that, as in the auditorium so on the stage, care has been taken, by the light of recent experiences, to guard against fire. The Brünn theatre has, not one, but two iron curtains,—the usual one at the proscenium opening, and the second one separating the back stage from the front. These curtains are, in order to ensure greater stiffness, not flat, but constructed of corrugated sheet-iron. The proscenium curtain is painted with the design of a Persian carpet which hangs down in wavelike folds, so that the deception is complete. The iron curtains are moved by an hydraulic press, the lever of which need only be set to cause the curtain to rise or to descend in between thirty and forty seconds. In case of a fire, however, the iron curtain may be caused to drop instantly from three different parts of the theatre. Gas and smoke find an exit by a chimney ten mètres square, which opens automatically in case of fire. Vaulted corridors with iron doors run between the dressing-rooms, and a party-wall, which, together with the iron curtain, forms an impenetrable whole, separates the stage from the auditorium.

A striking feature of the new theatre is the application of the electric light, which, as already mentioned, has been introduced throughout the whole house. Vestibule and staircase are lighted by five Gramme arc lamps of 1,000 candle-power each; the whole of the auditorium, the corridors, and the stage, by 800 Edison glow-lamps. A most effective play of coloured light is produced by green, red, or blue gelatine skins stretched over the glass bells of the lamps, the display of the various-coloured lights being effected by simply turning different switches. Everything worked well at the opening performance of the theatre, which took place on November 14th last, when Göthe's "Egmont" was produced.

We give in our present issue an exterior view of this model theatre.

LONDON STREET ARCHITECTURE.

BELL-YARD, FLEET-STREET.

The premises, Nos. 7 and 8, Bell-yard, Fleet-street, occupy the site of some ancient timber houses of a type now fast disappearing from our London streets. Though of picturesque effect, owing to their gabled fronts and overhanging stories, they had been so much altered and modernised that no details of interest remained.

No. 7, the building first erected, for Mr. J. K. Metherell, has a frontage of 13 ft. in Bell-yard, and extends a depth of 30 ft., giving another frontage to Crown-court, Chancery-lane, in the rear. It comprises, on the ground-floor, a shop, the full depth of the premises, with basement belonging thereto beneath. The four other stories contain each two rooms, and are let out as offices. The materials used are red Fareham bricks and Portland stone.

Soon after the erection of this building, the freehold of the adjoining site was acquired by Messrs. Maxwell & Son, the well-known law publishers, and the rebuilding of the premises was at once commenced, the building being planned to suit the requirements of their business. The ground-floor contains the public office; the first floor, Messrs. Maxwell's private room; and the upper stories are used as warerooms.

This building has a frontage of 21 ft. in Bell-yard, and a nearly equal frontage in Crown-court. The elevation is of a more decorative character than that of the first built house, and is entirely executed in Portland stone.

The cost of the entire block amounted to 4,341*l.*

The builders for the first portion were Messrs. Patman & Fotheringham, of Theobald's-road; and for the second, Messrs. Scrivener & Co., Fitzroy-road, Regent's Park; Messrs. Isaacs & Florence, of 3, Verulam-buildings, Gray's Inn, being the architects.

NEW ENTRANCE FRONT, ST. JAMES'S HALL, PICCADILLY.

The new entrances of St. James's Hall are erected after the Early English style, without any very strict adherence to old examples. The front is of red Mansfield stone and Luton bricks, with a few mosaics in the panels, the principal work in mosaic representing Music. The top of the tower is over 100 ft. from the pavement. The entrance is divided into three arches, supported upon granite columns, each hewn out of a solid piece of granite. There is a porch, from which the new entrance-hall is entered. This will be in future the principal entrance for the building. The total area of the entrance-hall is about 70 ft. by 30 ft. It is divided by clusters of columns into three aisles, from which spring the arches and the groining of the ceiling. The ribs are executed in Caen stone, the panels of the groining being filled in with blue mosaic, and powdered with gold stars and the various signs of the zodiac. The columns are of Burmantofts china, the caps and bases being Caen stone. The floor is laid with mosaic. The wall panels are filled in under the arches with tiles. In the centre of each panel are the arms, in relief, of the royal houses of Great Britain, and the walls between the columns will be covered by handsome tapestry curtains. In the centre aisle rises the main staircase direct to the great hall. The staircase is constructed of Caen stone and Burmantofts china columns. The steps are of white Sicilian marble. The staircase is flanked on each side with arches filled in with tracery, the openings being filled in with stained glass. Over the upper portion of the grand staircase rise ribs of Caen stone, forming a dome, the panels of which are filled in with stained glass. From this dome the staircase will be lighted in the day, and at night by a corona, executed in nickel and brass. On the left of the staircase will be the entrances into the Moore & Burgess Hall; on the right, the entrance into the upper parts of the Great Hall and the restaurant, Mr. Ambrose Austin's new ticket-office being on this side, next to the entrance-doors.

At the top of the staircase, next the entrance to the Great Hall, will be a new withdrawing-room for the accommodation of the Prince of Wales and members of the Royal Family when visiting the Hall. In the main building, next the street, over the entrances there will be a new small hall, while the floors above will be used for the accommodation of the company, as offices, &c. There is also extensive cellarage. The whole of the new entrance is in fireproof material, and the new staircase, it is asserted, could empty the Great Hall in a few minutes. Appliances for the extinction of fire are fixed in prominent positions over the building. The general contractor is Mr. Herbert Lea, of 4, Warwick-street. The fire appliances are by Messrs. Shand & Mason; the terra-cotta and Burmantofts ware by Messrs. Wilcocke, of Leeds; the mosaics by Mr. Rust; the gasfittings, &c., by the Wheathill Foundry Company; the stained glass is by Mr. Ion Paice; the stonework by Messrs. Mowlem, Chelsea; and the hangings are by Messrs. Maple. The works have been executed under very great difficulties, as the entrance to the halls has had to be maintained open during the whole rebuilding. The chief foreman, Mr. Davis, has had the great weight of this difficulty on his shoulders, and deserves much praise, as well as for moving and placing the heavy girders and stones in an extremely limited space without any accident.

The architects are Messrs. Walter Emden & Co. The quantity surveyors are Messrs. Evans & Deacon.

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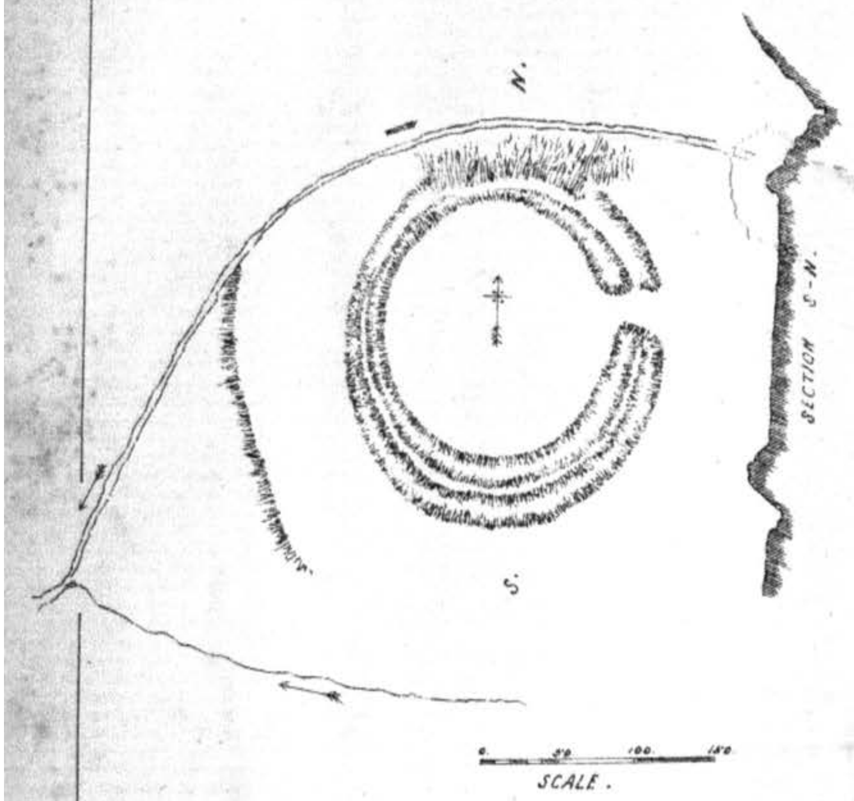
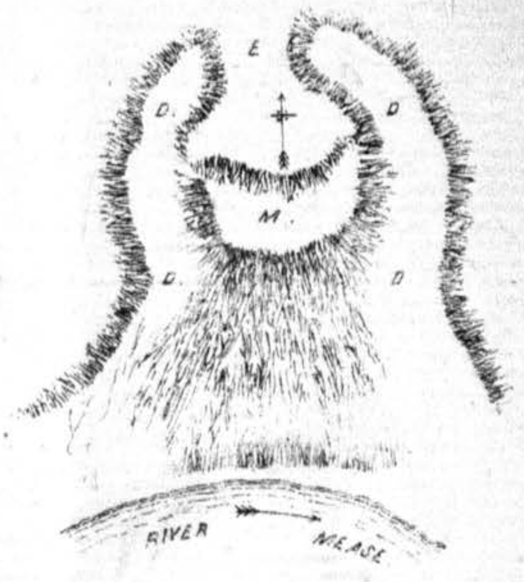
* According to Fölsch, *Theaterbrände*, the first theatre at Brünn was destroyed by fire in 1693.

* This sounds more picturesque than safe.





CROXALL MOUND.

D. DITCH.
E. LATE FILLING UP.
M. MOUND.

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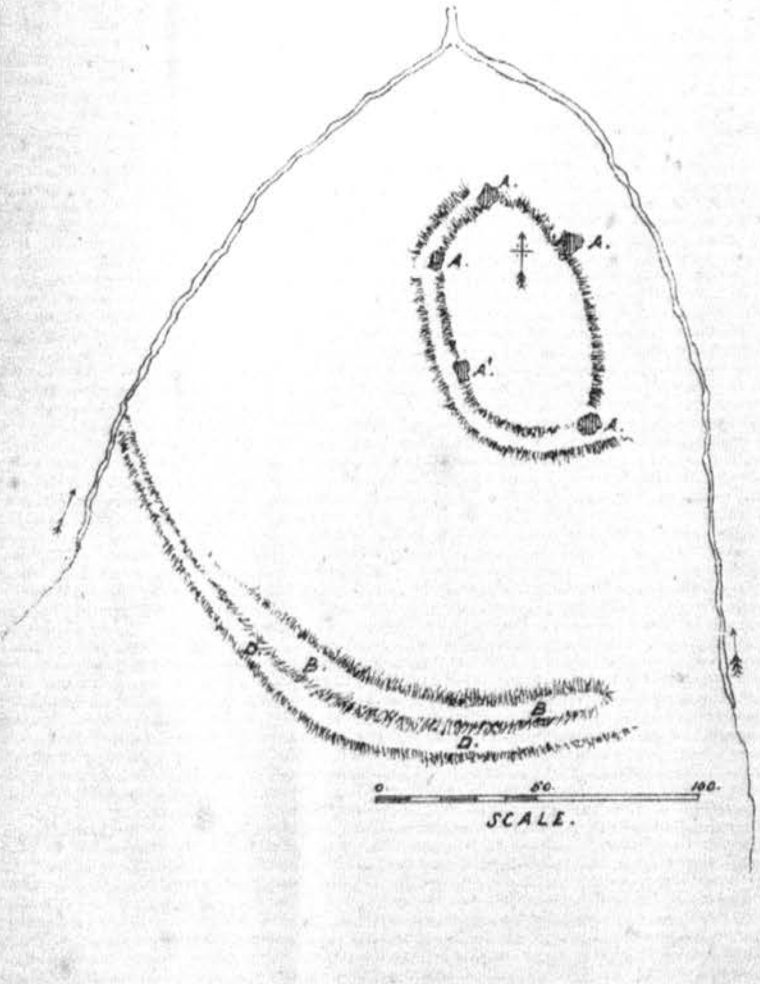
SCALE OF FEET.

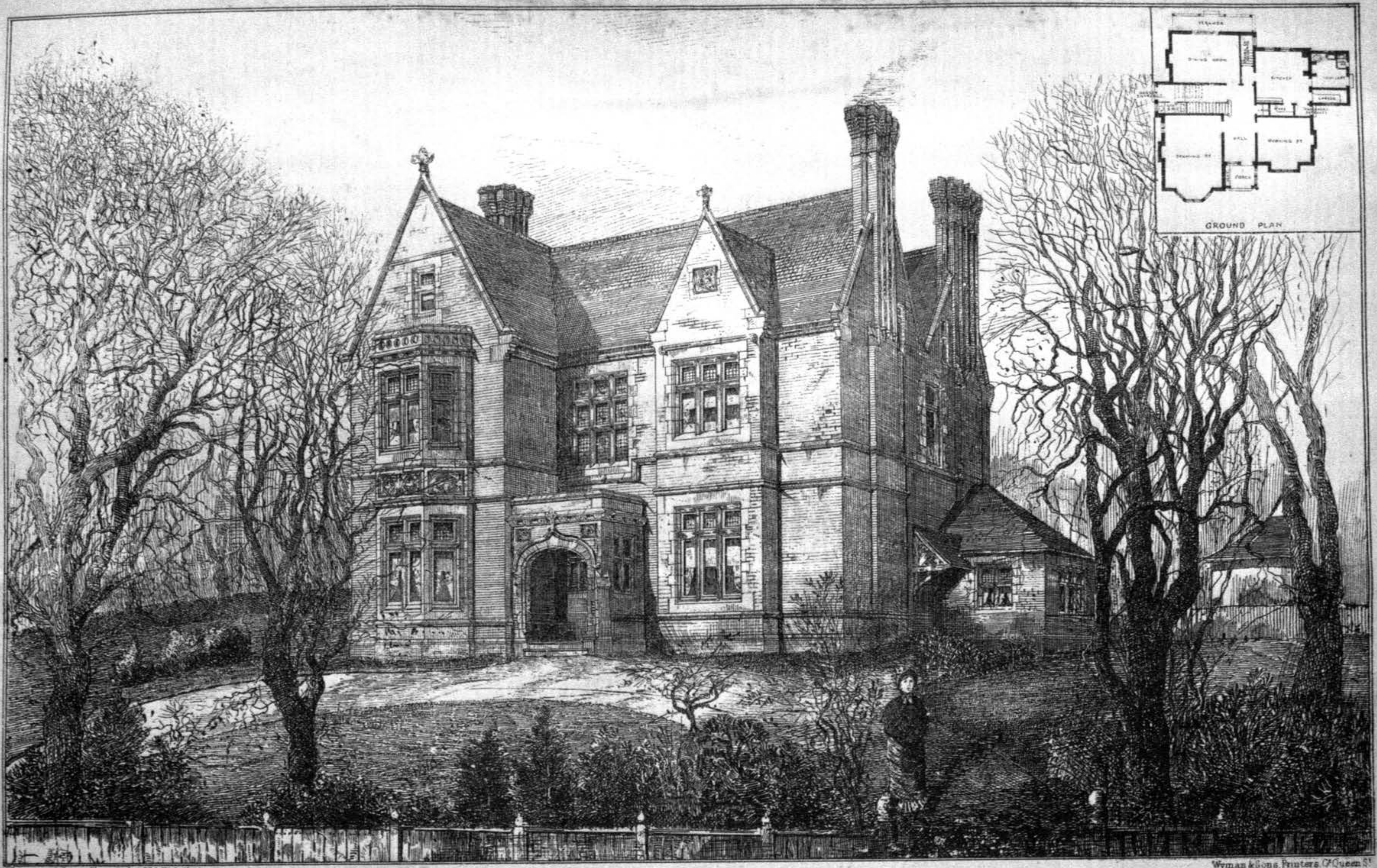
FILLONGLEY CASTLE.



A. MASSES OF OVERTHROWN MASONRY. SHEWING THE OUTLINE OF THE BUILDING.
A'. MASONRY IN PLACE.
B. BANK OF EARTH.
D. DITCH.

C.F. Kell, Photo-Litho. Castle St Holborn.

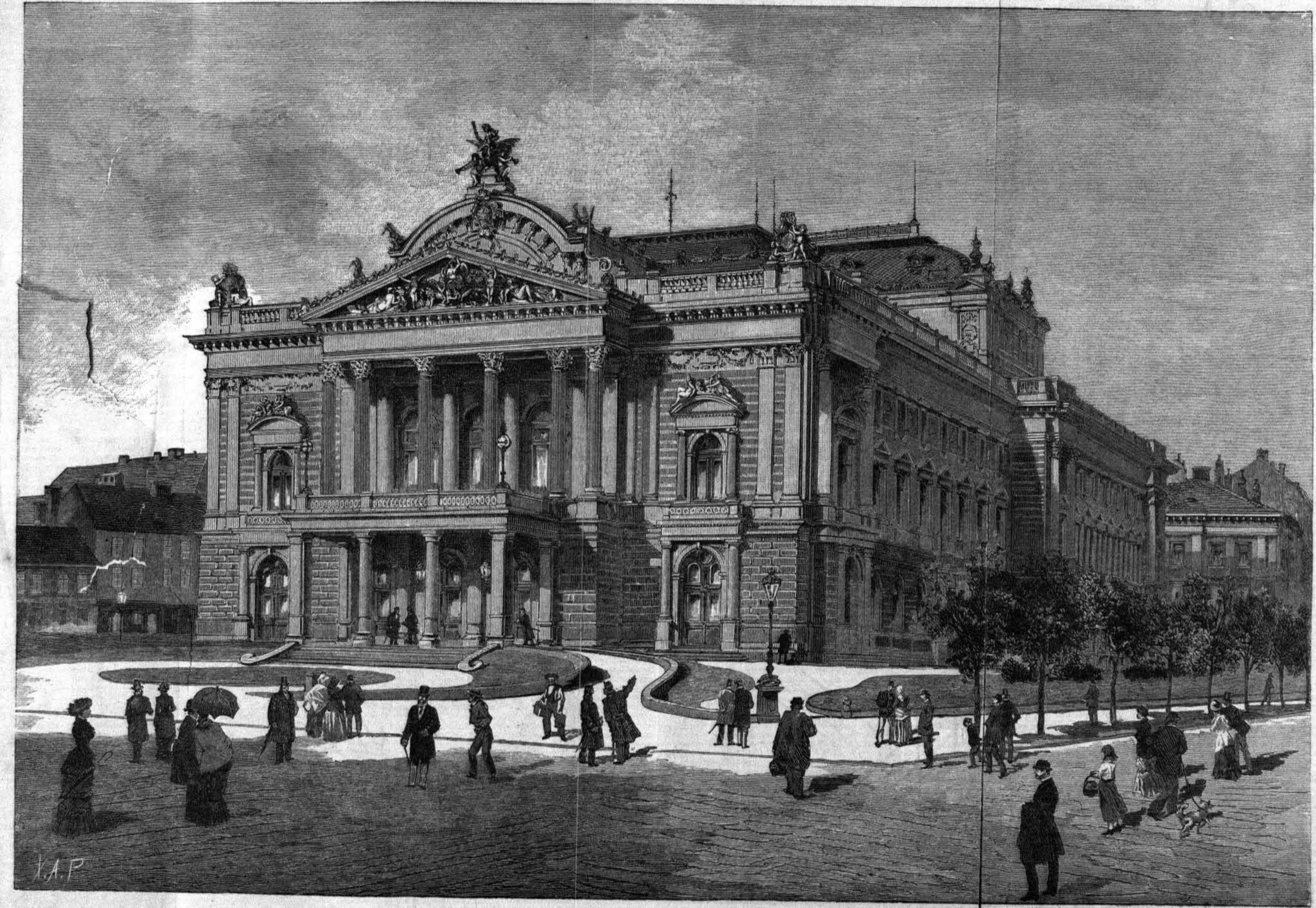
Wyman & Sons, Printers, Gt Queen St



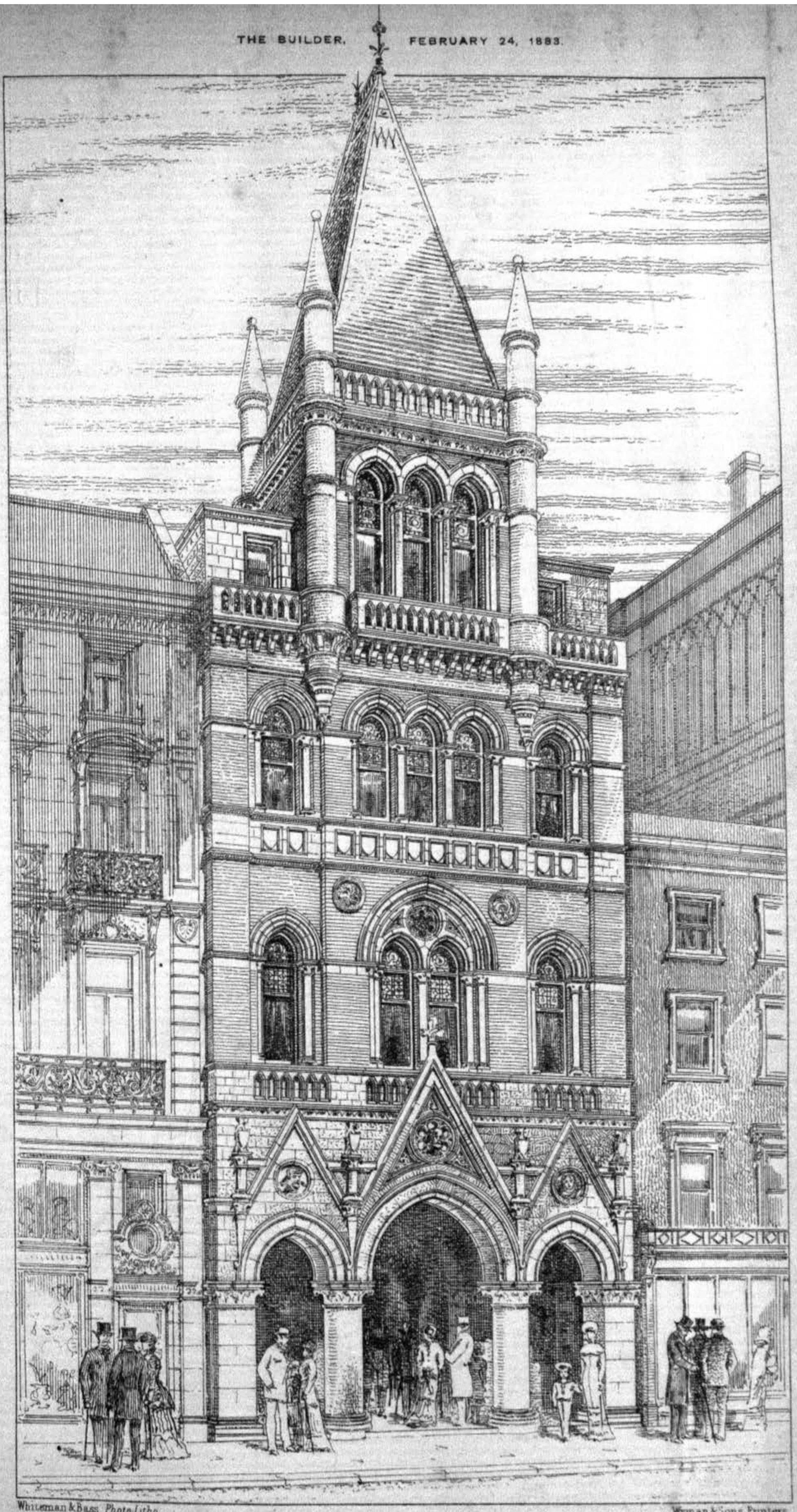
Whiteman & Bass, Photo-Litho 236, High Holborn.

HOUSE AT FINCHLEY.——Mr. Thomas Newell, Architect.

Wyman & Sons, Printers, Gt Queen St



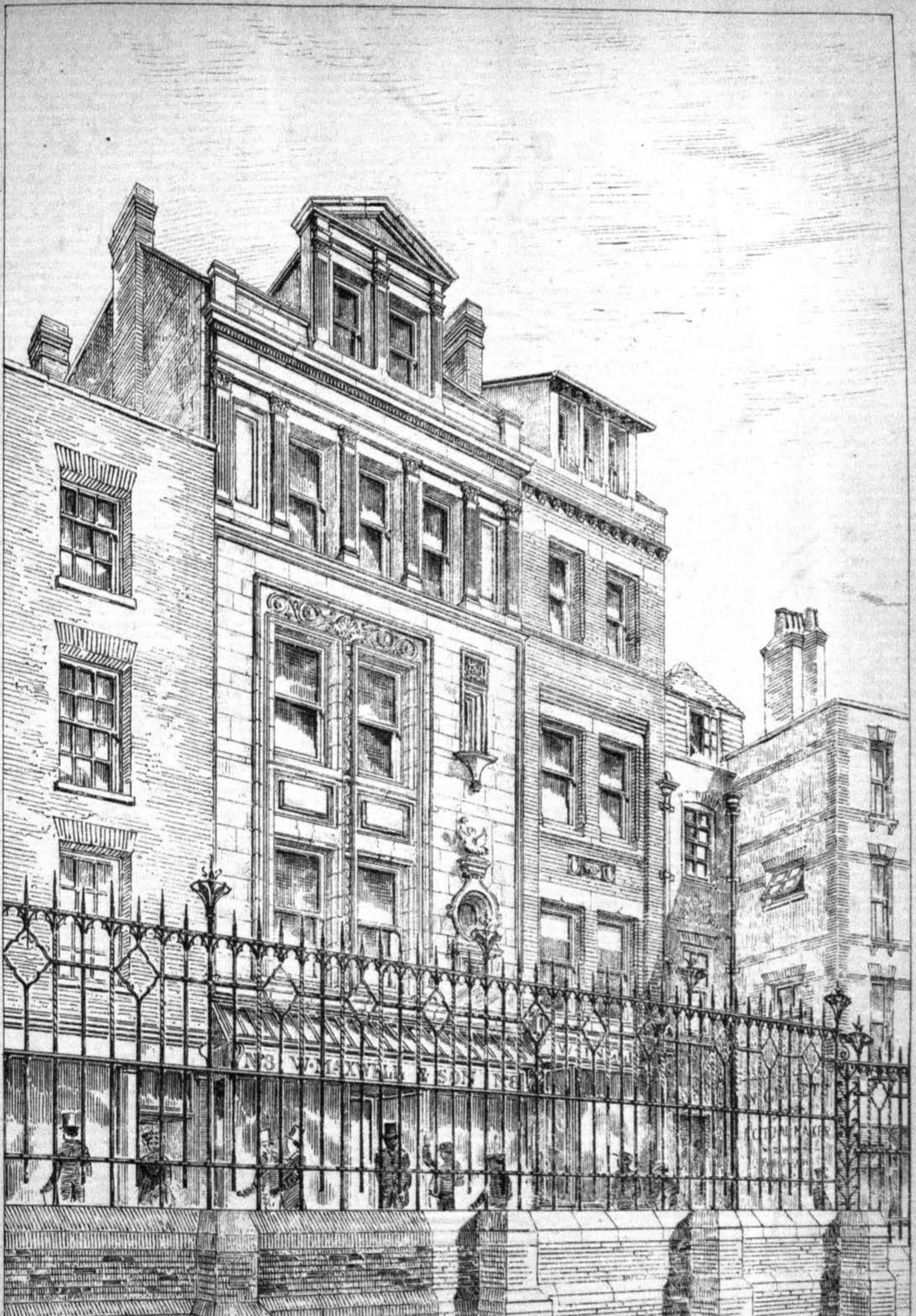
THE NEW STADTTHEATER, BRÜNN.—Herren Hellmer and Fellner, Architects,



Whiteman & Bass, Photo Litho

Wyman & Sons, Printers

NEW ENTRANCES TO ST. JAMES'S HALL, PICCADILLY.——MESSRS. EMDEN & CO., ARCHITECTS.



C. F. Kell, Photo-Litho. Castle St. Holborn.

Wyman & Sons, Printers, Gt. Queen St.

HOUSES IN BELL YARD, FLEET STREET.——Messrs. Isaacs & Florence, Architects.

THE PROCESS OF OBTAINING SANCTION FOR PUBLIC WORKS IN GREAT BRITAIN.*

Before commencing the subject of the compulsory purchase of property, to acquire which is one of the main objects of a private Act for public works, it will be well to give a slight sketch of the tenures by which the land in England is held.

The land at the Conquest was apportioned to the various Norman knights who joined William the Conqueror in his victorious expedition, and with the grant was imposed the duty of furnishing a certain number of knights in time of war. Thus all the manors in the kingdom were held of the Crown, and it became the principle that the king is the lord paramount and possessor of all the lands in his kingdom.

All manors and lands, then, were held of the sovereign-in-chief by two kinds of service:—

1stly. Tenants "per baroniam." These constituted the great barons of England, who were bound to attend the general councils of the realm, the forerunners of our present Parliaments, their number being estimated at about 250. 2ndly. Tenants in chief by knights' service. This class was lower than the preceding, and is supposed to have numbered about 750.

"The whole feudal system was rooted in the land, and held on to it like a forest. To have so much land was to be a baron; to be a baron was to be liable to furnish so many knights; to be a knight was to hold land perhaps of the king, perhaps of a great baron."

Such was the ancient system of land tenure which continued in force until the whole of the feudal tenures were abolished at one sweep in the reign of Charles II. But the theory that the king holds all the land in the kingdom, by inference for the general good of the nation, still survives, and the theory is put in practice by the compulsory purchase of land for a public undertaking, which must, however, be of such great public advantage as to compensate the nation for the inconvenience its individual members personally affected may suffer.

Such being a slight outline of the theory of land tenure, we have now to consider the process for the acquisition of powers to construct those public works which have been the cause of the greatness of England of the present day.

Powers for the compulsory purchase of land in the United Kingdom can only be obtained by an Act of Parliament, but there is no limitation as to who may apply for one, and any company, corporation, or private individual may do so. Such a private Act must pass through all the stages of the most important public Bill, a procedure which necessarily entails, especially in opposed Bills, considerable cost on the promoters. In dealing with the various stages through which a private Bill has to pass, the author will only indicate the purely legal proceedings which are almost entirely, and in most cases altogether, beyond the province of the engineer, and with which he cannot be expected to deal, whilst he will discuss at greater length the rules and practice which more nearly concerns the engineering profession.

The procedure before Parliament is framed on the Standing Orders of both Houses, which have been drawn up with the object of giving due publicity to the application; so that all parties who may be in any way affected by the proposed Bill, may have a fair opportunity of stating their objections to the scheme; and these same Standing Orders are the guide to regulate the procedure to be followed in the progress of the Bill through its various stages, until it is either finally rejected or receives the Royal Assent, and becomes a part of the Law of the land.

Let us now suppose that application is intended to be made to Parliament for a private Act, and follow the routine that will have to be observed. Bills are divided by the Standing Orders into two classes. With the first engineers are but little concerned, Bills to authorise the construction of works such as railways, docks, canals, waterworks, &c., being included in the second. Firstly, a notice by advertisement has to be inserted in the months of October and November, or either of them once in the London, Edinburgh, or Dublin *Gazette*, as the case may be, and in three successive weeks in a newspaper published in the county in which the works are to be situate; and if the lands are in more than one county, then, in addition to the publication in each county, in a London daily newspaper as well, or a Dublin or Edinburgh paper published at least twice a week, if the Bill relates to either of those countries. The effect of this Standing Order is that if a branch line joins the existing main line of a great company running through several counties, it will be necessary to insert the notice in a London daily paper, although the works proposed may be all in a distant county. The only part of this advertisement which generally affects the engineer is the description of the termini, which must be stated with sufficient exactness to enable any one interested to identify the spot within a few yards.

In order to avoid omitting the mention of any parish which may be touched by the line of works, it is usual to include every parish adjacent, and state that the works will pass through some, or all, of them.

In the case of tramways, the notices must specify at what points, and on which side of the street it is proposed to lay the tramway, so that for a distance of 30 ft. or upwards a less space than 9 ft. 6 in., or if railway carriages are proposed to be run, 10 ft. 6 in. shall intervene between the curb and the rail of the tramway. The limits of a cemetery, gas, or sewage works have to be specified, and the intention to divert water into any canal or cut has also to be duly noticed, whilst, in the case of tramways, a further intimation has to be given by notices posted in conspicuous places, throughout the streets, in which it is intended to run.

During the months of October and November the engineer's attention has to be devoted to the preparation of the Parliamentary plans and sections, which, with the accompanying book of reference and *Gazette* notice, have to be duly deposited, before eight o'clock on November 30th, at the Private Bill Office, at the office of the Clerk of the Peace of the county or counties affected, and with the various parish clerks along the line of route. Often great exertions have to be made in order to get the work completed in time, and many are the stories told of the exciting rush to get country deposits in before the dreaded hour of eight o'clock strikes, but nothing is more fatal to accuracy than all night work, and many a Standing Order opposition would have been avoided had more ample time been allowed for the preparation of the necessary deposits.

And first as to the plan. The minimum scale allowed is 4 in. to the mile, but unless the whole plan is on a minimum scale of 400 ft. to the inch, enlarged plans of buildings, yards, gardens, and courts have to be added. This necessarily entails a great deal of additional work, whilst in many cases the numbers could not be placed on the general plan, but an enlargement is required. The preparation of these plans is a much easier matter now than formerly. Then the usual practice was to obtain tracings of the parish plans, reduce them all to six chains to the inch, and piece them together; where two second-class parish plans adjoined the work of patching up the junction was one requiring great care, patience, and dexterity. Now, where the Ordnance Survey is published, all is changed, and perfect plans, requiring, however, correction to date, are at the service of the engineer.

The choice will naturally lie between the plan of 6 in. to the mile, which economises much in cost of lithography, for a long line, but necessitates enlarged plans, and the parish survey of 25 in. to the mile. This latter is, in the author's opinion, the best to adopt for all suburban work, or where a large number of enlargements would be required. Larger scales even than this are sometimes adopted for metropolitan work, 88 ft. to the inch being frequently used; but where, on the other hand, enlarged plans are but seldom needed, the 6 in. scale will be the best to adopt. The plans should be prepared with the utmost care, bearing in mind the ordeal to which they will be subjected. Attention should be especially directed to see that all enclosures existing on the ground appear on the plans, that all houses are inserted, of their correct shape and size, and gates across roads, which often divide a public road from an occupation one shown. Often, too, a railway company will have a slip of land outside its thorn fence, of which no indication sometimes exists on the ground, the boundary of which should be shown by a dotted line and a separate number, but which is easily overlooked.

With regard to the rails of tramways, if the public road is referenced as "public road and tramway," it does not seem to be necessary to show them, and on the 6-in. scale it is almost impossible to do so; but when the 25-in scale is employed it may be desirable that they should be inserted.

The line of works, and how it should be marked on the plan, have now to be considered. If a railway, a full line representing the centre line will be marked throughout, with the limits of deviation shown by a dotted line on each side; there is no Standing Order to compel the words "centre line of railway" to be marked on this line, and many engineers omit it altogether; it is, however, desirable, to insert it on the first sheet, and sometimes it is written on every sheet of the plan. "Limit of deviation" should be marked on each sheet on both sides of the line. If it is desired to exclude a road or field, the dotted line of the limits must be taken close to the fence which bounds it, within the adjoining field, which is numbered and referenced. The distances must be marked in miles and furlongs from the commencement, which should be marked "Commencement of railway," and at the end of the line "Termination of railway" should be written, and the total length, in miles, furlongs, and chains, should also be added. Some engineers, however, are in the habit of omitting this latter, considering its insertion on the section a sufficient compliance with Standing Orders: indeed, the author is of opinion that no allegation could be sustained in the case of its being omitted altogether, as there is no Standing Order which requires the total length to be so written. All curves not exceeding one mile radius, must be marked with a memorandum of the length of the radius, in furlongs and chains on the plan. Some engineers mark a mile curve, as "Radius, eight furlongs," or one mile, whilst others omit it, as it is impossible to prove an allegation on this point; it is, however, desirable to insert it. The commencement and termination of the curves are now often marked, especially when the plans are drawn to a large scale; but there appears to be no obligation to insert this information. Tunnelling, if any occurs on the line, must be marked on the plan by a dotted line, the word "tunnel" should also be written along it. Covered way, however, must not be so indicated.

Diversions of roads come next in order. Any such are shown by two dotted lines, indicating the width of the road; the words "road diversion" must be written at the spot. No centre lines are needed in these cases.

We come now to junctions. Here it is requisite to show the course of the existing or authorised line of railway for 800 yards on each side of the point of junction, and a dotted line indicating the centre line is all that is required. The words, "Course of the Great Northern Railway," or whatever the line may be, must be written as well along it. All descriptions of railways should also be written in full, thus:—"London, Chatham, and Dover Railway," not, "L. C. & D. Ry." If the line joined is not the main line of the company, the name of the branch should be added, thus:—"London and South-Western Railway, Sidmouth Branch." It is not necessary to show the lines of rails of the railway with which a junction is effected.

When enlarged plans become necessary, to give details and numbers, as with a small scale general plan they often will, they should, if possible, be placed on the same sheet as the general plan. In 1863 it was decided that all the numbers must be placed on the general plan, and that they must not be referred to an enlargement. This has been reversed for some time, and the numbers may now be placed on the enlarged plan. This should be entitled, "Diagram showing Numbers" (or "Numbers and Details," as the case may be), at 5 miles 3 furlongs, or whatever else the correct mileage may be, on this enlargement, which must have a proper scale attached. "Centre line of railway" and "Limit of deviation" must be written, but the mileage and the radii of curves having been inserted on the general plan, need not be repeated. With regard to the numbering, it is not desirable to insert braces, as was formerly almost the universal custom, and is still very commonly followed, as the omission of one may lead to an allegation.

When a new road or street is to be constructed, it must be duly marked on the plan by dotted lines on the sides, and a full centre line; on this latter, "Centre line of new street," should be written, and "Line of frontage" along the dotted lines at the sides. When the section refers to a datum point on the plan, this should be so marked, and the words, "Point for datum" written at the spot. County and parish boundaries have also to be shown, and the name of the county and parish duly written in their proper places.

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* By Mr. H. Michell Whitley, C.E., read at a meeting of the Civil and Mechanical Engineers' Society, on the 18th ult., Mr. R. Harkness Twigg, M.I.C.E., in the chair.

In plans for tramway schemes, particular care must be taken to show the narrow places in the streets, if any, which had been previously alluded to in the notice. Dock, waterwork, river improvement, and other similar plans require no special mention, as the rules before mentioned are followed where they apply.

The tidal waters on one of the deposited plans (in the case where the work is situated on tidal lands) must be coloured blue, and marked "Tidal waters," for deposit at the Harbour Department, Board of Trade, and on such plans, if they include any bridge across tidal waters, the span, and headway of the nearest bridges above and below the proposed site must be marked.

Having considered the preparation of the plans, we will now proceed to examine the form in which the accompanying sections have to be furnished in order to comply with the standing orders.

The section must be drawn to the same horizontal scale as the plan, and to a vertical scale of not less than 100 ft. to an inch, but larger scales, in proportion to the scale of the plan, are generally used. The height of every embankment, and the depth of every cutting, has to be duly marked; and the datum horizontal line must be the same throughout the whole length of the work, or any branch, and must be referred to some fixed point stated in writing on the section near some part of the work, and in the case of a canal, navigation, road, or railway, near one of the termini.

In the case of a railway forming a junction with an existing line, the level of the rails at the junction is generally taken. This is, of course, not an absolute fixed point, as the level varies from time to time with the packing the sleepers, but custom has sanctioned this datum, which is generally described in the following or similar terms:—Datum line 132·27 ft. below the upper surface of rails of the Great Western Railway at the point of junction therewith marked X on the plan. Where the line is divided into two or three lines it will be sufficient to write "Datum same as railway No. 1" (or whatever the number may be) on the datum of the other lines. This was not so at one time; a separate datum point near the termination of the line itself being required, and this was a great convenience, as when a line is several miles in length, it may be requisite to check the levels through the estate of an opposing landowner, to level 40 or 50 miles from the datum point at the far end. At this point of junction, "Commencement of railway junction with Great Western Railway, level unaltered" should be written, and "line corresponding with upper surface of rails" should be inserted once at the commencement of the line.

The distances on the datum line, must be marked in miles and furlongs, to correspond with those on the centre line on the plan, whilst "Termination of railway," and the total length in miles, furlongs, and chains, must be added at the end of the line. The gradients must be marked with heights from the datum at each change, and the heights of the railway over, or depth under, roads, railways, canals, or navigable rivers, with the span and height of the arches of all bridges and viaducts marked; level crossings, if any, must also be noted, and if the level of the road is to remain unaltered, it must be so written on the section.

The extreme heights of cuttings and banks, over 5 ft., must also be written, and tunnelling duly shown, the word "Tunnel," with the length in yards, being inserted, as must also be done in the case of a viaduct, whilst the heights and depths of banks and cuttings at each end must be given in figures. At the point of junction the gradients of the line joined must be indicated for 800 yards on each side of the point of junction. This is generally done by a dotted line, there being no necessity to insert a datum line.

The mode in which the cross-sections are to be prepared is fully described in the Standing Orders, and the only point requiring attention is a recent decision, which, until it is generally known, will probably be the cause of numerous allegations. This is, that the greatest inclination of the present road is not to be taken at the steepest point, within the 200 yards on each side of the line, but between the points within which the road is to be altered. Such is the form in which sections have to be prepared for deposit, under the Standing Orders. These plans and sections have to be accompanied by a book of reference, containing the names of the owners, lessees, and occupiers, but its preparation does not fall within the province of the engineer.

The author has been thus minute in describing the form in which plans and sections are prepared, as it is of so much consequence to the engineer to see that his plans will comply with Standing Orders, and also in the hope that members will contribute, in the discussion, examples of difficult points decided by the examiners, and so aid in the compilation of a list of precedents that will be of the utmost value, especially to the young engineer called on for the first time to prepare a set of plans for some important public work which he knows will be strongly opposed.

The plans, sections, and book of reference, with *Gazette* notice, having been duly deposited, not omitting, in the case of railway Bills, the 1-inch Ordnance map with the line of railway marked thereon, which have to be deposited with the Clerk of the Peace of the county or counties, and at the Private Bill Office, the other deposits in order are,—on December 17th, a printed copy of the Bill in the office of the Clerk of the Parliaments; on December 21st, the petition for the Bill, with Bill annexed, in the Private Bill Office; on December 31st, list of owners, lessees, and occupiers, and the engineer's estimate. The form in which this latter has to be prepared is duly specified, and calls for no particular remark. It will, however, be found well worth the trouble to prepare sketches and take out the quantities of the various works proposed to be constructed, as an estimate so prepared, and based on prices for similar work, paid by the engineer, is extremely difficult to overthrow. This completes the list of documents required to be deposited, and brings us to the second stage of the subject, the procedure in Parliament.

The examiners commence their sittings on January 18th, and memorials complaining of non-compliance with the Standing Orders have to be presented before the date given in the rules issued by the examiners. If it is determined to oppose on Standing Orders, the plan, section, and book of reference are subjected to a critical scrutiny, and allegations are laid against any inaccuracy or misdescription that can be detected. Having so fully discussed the preparation of the Parliamentary plans, it is needless to dwell further on this stage of the Bill. If the examiner reports the Standing Orders are complied with, the Bill is ready for the next stage; but if otherwise, it is "sent upstairs" before the Standing Order Committee, and if it is found that the errors are not of much importance, the Standing Orders are dispensed with, but if otherwise the Bill is thrown out, which brings its career to an abrupt termination.

Assuming Standing Orders safely passed, the Bill is now read a first and second time in the House, and referred to a select committee. Sometimes, however, a Bill which needlessly interferes with great private interests, for a doubtful public advantage is thrown out on the second reading, if its opponents can muster a sufficient number of members; but this case seldom occurs.

In 1865 an attempt was made to ease the labours of committees, in shortening the time required for the investigation of the merits of a Bill, by constituting a court of referees, to inquire into "the engineering details of the undertaking, the efficiency of the works for the proposed object, and the sufficiency of the estimate," but it was found that these courts, whilst raising a cloud of technical engineering objections, which practically presented no difficulty, but yet obscured the merits of the work, doubled the labour of the inquiry, as the same questions were gone into again, under other names, before the committee, and the result being the reverse of what was anticipated. They were abolished after a few years' trial. The Bill now comes before the committee, who have had previously presented to them the petition containing the defects the petitioners allege, and in which they pray to be heard by counsel against the Bill.

Let us now suppose the case of a railway Bill, promoted to supply accommodation to a town distant a few miles from the railway system with which it is proposed to be connected, and which runs for some miles through the estate of a large landowner, and within a short distance of his residence, who has petitioned against the Bill.

The promoters open the case, and their counsel's speech and the evidence are principally directed against the allegations contained in the petition. The principal inhabitants of the town give evidence of the necessity of a railway to them, and their willingness to take shares in the line, as a proof that they believe it will pay; as many landowners as will attend to support the line state the benefit it will be to their property, and evidence is also given to prove the extent of the traffic at present existing between the two towns,—all this portion of the case being directed to prove that a public necessity exists for the construction of the railway. The engineer then gives his evidence and details his instructions he received from the preliminary committee, and the reasons which induced him to choose the line before the committee in preference to any other. The estimates he considers ample, and he has laid out the line with as little interference as possible with the estate of the petitioner, which he considers will be much enhanced in value by the construction of the line. Other engineers confirm this evidence, whilst the surveyor considers there is nothing in the petitioning landowner's case that cannot be fairly met by compensation. The money arrangements are then gone into, and the traffic manager of the railway joined called, if the line is favourable, who states what his directors will do, perhaps work the line at 50 per cent. of the receipts, and guarantee the debentures, and he will probably also state that he sees no difficulty in the way of raising the necessary capital. This will close the case for the promoters. When the opponents open their case and direct their evidence in support of their petition; in this case they would attempt to show that no public necessity existed for such an interference with private property, the traffic estimates would be questioned, evidence would be given that the promoters seriously underrate the damage that the construction of the line would do to the estate in question; that its residential enjoyment would be destroyed, or seriously impaired; that the line is laid out badly in an engineering point of view; that the estimates are totally insufficient; that no return can ever be expected on the capital expended; and that if such a railway is required, it can be so laid out as to avoid the damage to the estate of the petitioner, whilst presenting greater conveniences for the public. With these views clearly before them, the committee decide whether the preamble is proved or not; if the former, the clauses are then settled, and the Bill is through one more stage. The committee of the other House now remains to be passed, where the fight, within a somewhat narrowed limit, can again be renewed, but if successful here, the Bill passes the third reading, and then the Royal assent, when it becomes an Act of Parliament.

Such, then, are the stages through which private Bills have to pass, and it may be asked what,—if anything,—can be done to limit the time and money expended, which in very many cases amount to a most serious sum.

With regard to Standing Orders, some plan would seem to be required which, whilst insuring general accuracy, would not give rise to the interminable and tedious reiteration of trivial allegations, with which engineers have so often to do, and the formulation of a clear list of precedents given with authority is a desideratum towards this end. As to the progress of the Bill through its succeeding stages, the matter is one that is mainly in the hands of the committee itself, and it is difficult to see how an inquiry which has for its object the sanctioning or otherwise of a measure which, whilst admittedly of great public importance, interferes, perhaps necessarily, with private interests of magnitude, can be concluded without full investigation. The question is one of great interest, and the author commends it to the members of this society in the hope that some practical suggestions may be made towards shortening the time consumed in these Parliamentary inquiries.

Ventilation of Theatres.—Messrs. Robert Boyle & Son are at present applying their system of ventilation to the new Grand Theatre, which is in course of erection in Upper-street, Islington.

DECORATION OF THE DOME OF ST. PAUL'S.

Sir,—In giving you, in my former letter, my views on the subject of the decoration of St. Paul's, I did not, I find, express myself as fully and unmistakably relative to the dome as I could have wished, and as its importance demands.

Permit me now to say that I still adhere entirely to the scheme which I quoted from my paper of 1853, by which it would be divided neither by parallel circles nor meridional arcs, cutting it up into either zones or vertical segments; supported therein by the teaching of nature in the greatest of all domes,—the glorious firmament above us, wherein its nocturnal ornaments, the stars, every one of which differs from another in glory, causes the orbed expanse the more forcibly to seize on the imagination.

I am, therefore, glad to find the prominent ribs in Stevens's design meet with almost general disapprobation. It is to its consisting of one vast spherical surface, hanging over the void, expressing high human power and energy, that the dome in question is indebted for its attributes of material and moral sublimity; and this highest of all architectural qualities the vertical ribs would have the effect of destroying, and reducing it to the condition almost of a dome on an octagonal base. Undivided, it is sublime; but cut it into numerous parts by ribs, and, though still beautiful, it will be no longer sublime.

But the views I have stated lead me to question the propriety not only of the ribs in Stevens's design, but of all the architectural accessories. It appears to me that the balustrade, which must affect the integrity of the hemisphere, and the "axial thrones" are an error in the same direction, though not to the same extent, as the framework of Thornhill; and that pilasters and pediments forming thrones have no more business on the surface of the dome than pilasters and arches forming arcades; which latter would have been fatal to the grandeur of the dome but for their indistinctness, assisted by the dense atmosphere the place. The thrones with their colossal occupants, might, perhaps, in themselves have an imposing effect from beneath, but it would be at the expense of the general effect of the dome, on the surface of which they must appear as so many incisions. Viewing most carefully in imagination St. Paul's dome so treated, I cannot conceive them otherwise than as marring to its unity and simplicity.

As to the care taken by, or attributed to, Stevens to tie the dome to the drum below, that is not half so important as preserving its unity, to which no amount of sacrifice is too much. Columns or pilasters are essential to grandeur below, and the thicker set the better; but ribs corresponding to, or in recognition of them, are not essential to the dome, which, like a garment without seam, is most perfect in one piece, however it may differ, like the dome of the Pantheon at Rome, the decoration of which, such as it is, is on a right principle, from what it spans. I believe the circular frames, with their figure-subjects, are all that is necessary to relieve the surface of the dome, which should be elsewhere covered by some species of delicate Arabesque giving complete repose to the eye.

If human figures are introduced anywhere else, it should be only round the base of the dome, where there would be ample field for patriarchs, prophets, apostles, and martyrs, of about 10 ft. stature. They would have something like the effect from below of the progressive group of the Panathenaic procession from the frieze of the Parthenon. They should have no cornice, moulding, or other architectural feature separating them from the space above, which might be mistaken for the springing line of the dome; and, despite the authority of the so-oft-cited dome of the Cathedral of Parma, no backgrounds. That example seems to have been held up as a model merely because it was the work of an eminent painter, and praised by Titian, who, of course, saw it with the eye of a painter, not of an architect. I readily admit the greatness of Correggio's work, and can point with pleasure to a far higher tribute to it than Titian's. Annibale Caracci, the most distinguished of the three kinsmen of that surname, founders of the Bolognese school, writing to his cousin Ludivico from Parma, says:—"I went to see the grand cupola which you have so often commended to me, and am quite astonished. To observe so large a composition, so well contrived, and seen from below with such great exactness, and, at the same time, such judgment, such grace, and colouring of real flesh; good heavens! not Tibaldo, not Nicolini, nor Raffaelle himself, can be compared with him." Further on, after avowing that he would not exchange one of the pictures he had just seen of Correggio for the St. Cecilia of Raffaelle, he says, "I rage, I weep to think of the misfortunes of poor Antonio; so great a man, if indeed he were a man and not angel in the flesh."

No higher praise, perhaps, could be bestowed on a painter or his works. Yet it does not render the dome of the Cathedral of Parma a proper model for dome decoration. Annibale Caracci, like Titian, being only a painter, would speak of the work as a painter only, without thinking of the architecture. If it does not interfere with the unity of the dome, it interferes with its entity, for which no amount of pictorial beauty can atone; and does so, doubtless, because Correggio felt no architectural solicitude about it, and cared only for the best display of his own priceless painting; which had perhaps, however, been better represented on the frustum of a hollow lofty cone, than on a dome.

Whether it had or not a cathedral dome, though the highest heaven,—the heaven of heavens of the place,—cannot be made to represent the actual heaven of the blest, consistently with what is due to the genius of earthly architecture.

Allow me to add that it is not by any captious spirit that I have been led to make the foregoing remarks; but solely by a consideration of the more or less grievous consequences to a great national monument, that would result from any mistake in the treatment of its crowning and noblest feature. Samuel Huggins.

P.S.—Since penning the above I have read the letter of "A Painter" in the *Builder* of the 17th inst., asserting the existence of an engraving executed under the eye of Sir Christopher, containing proof that he did not greatly value the smooth uninterrupted hemisphere of the dome, which it shows relieved by panels and ribs. But that engraving shows, at the same time, that he afterwards set as little value on the panels and ribs, since he allowed them to be effaced; and, consequently, that he had no very distinct idea how the dome should be finished. It suggests, I think, the possibility of architects of the present day, with the additional light of two centuries of architectural history, attaining a truer conception of what is due to the dome than its constructor himself had reached.

That Wren, with his fondness for angular geometrical forms, and his sound judgment, approved of the noblest geometrical and architectural feature of his great work being put into masquerade, and made to wear the semblance of another inferior and complex feature, no amount of evidence seems to me sufficient.

As to Correggio, whatever he has been considered by painters, his practice at decoration ran counter to the principles of architecture; principles which guided Giotto in the decoration of his Chapel at Padua, and Michelangelo in the ceiling of the Sistine Chapel. His extraordinary mastery of *chiaroscuro* led him to give to his pictures an air of space and depth which, mocking all limitations, annihilates the architecture it is intended to adorn. S. H.

PORTLAND CEMENT CONCRETE.

Mr. Henry Faija, Assoc.-Mem. Inst. C.E., read an interesting paper entitled "Portland Cement and Concrete," before the members of the Southend Mechanics' Institute on Monday evening last, the 19th inst. After describing Portland cement and its manufacture, the lecturer passed on to treat of methods of cement testing, as to which he gave the following short specification to insure the delivery of a true Porland cement:—

SPECIFICATION FOR THE DELIVERY OF PORTLAND CEMENT.

1. *Fineness.*—To be such that the cement will all pass a sieve having 625 holes to the square inch, and leave only 10 per cent. of residue when sifted through a sieve having 2,500 holes to the square inch.

2. Weight per striked bushel to be not more than 116 lb., nor less than 110 lb.

3. Specific gravity to be between 3·00 and 3·05.

4. *Set.*—A pat made with the minimum quantity of water to set in not less than three hours, nor take more than six hours. The increase in temperature during setting not to be more than five degrees Fahrenheit.

5. *Tensile Strength.*—Briquettes which have been placed in water sixteen or seventeen hours after gauging, to carry at the expiration of seven days 400 lb. per square inch without fracture, and at the expiration of twenty-eight days from gauging to have increased in strength at least 25 per cent.

6. *Expansion or Contraction.*—Pats left in air or placed in water to show no cracks or other signs of deviation in form at the expiration of seven days from gauging.

7. *Colour.*—The cement to be of a cold grey colour, and when gauged to show no change if left in either air or water.

If a quicker or slower-setting cement is required, the weight and tensile strength must, of course, be varied in accordance with those requirements, and it must be borne in mind that the apparatus which is to be employed in carrying out the tests must be mentioned, otherwise difficulties may occur even though the cement may be of the required quality.

Proceeding to treat of Portland cement concrete, the lecturer observed that the production of a good, sound, and economical concrete, is dependent on the existence of a proper proportion between the large and small aggregate and the cement, in order that all interstices between the larger aggregate may be filled by the smaller aggregate and cement, so that each piece of aggregate is surrounded with cement; and as the cement is more expensive than the aggregate, no more cement should be used than is sufficient for this purpose. A concrete may thus be considered as composed of two parts, an aggregate and a matrix, the aggregate being the larger pieces which are united by the matrix composed of the cement and sand, or cement and the fine particles of the same material as the aggregate used: thus, a concrete composed of shingle would have sand added, which would be formed into a mortar or matrix uniting the shingle; while in the case of a concrete composed of a crushed stone, the matrix would be composed of the cement and the stone dust, which would unite the larger pieces of stone. The proportion of cement used to the aggregate must depend on the nature of the work for which the concrete is required, and the strength which it is desired to obtain; on the size and form of the aggregate, and on the proportion which the larger and smaller aggregate bear to each other, as well as on the nature of the aggregate used. To determine this proportion, it is usual to fill a bucket or other measure with the larger aggregate, and then fill it up with water, the quantity of water in the bucket will represent the amount of matrix necessary to make the concrete solid, the matrix being composed of the cement and fine aggregate, the proportions of which may be determined by the requirements of the case and the proportion of the fine and large aggregate, which may be ascertained in a similar manner. For many purposes of concrete laid *in situ* twelve of aggregate to one of cement is sufficient, and the Docks at Chatham have been principally formed of concrete in this proportion, with the exception of the outer face, 9 in. or 10 in. thick, which is composed of a better concrete. It seems almost impossible that such a small proportion of cement should give the desired strength, but it must be remembered that if the larger aggregate is separated from the finer, the constructive strength of the concrete is represented by certain large aggregate united by a matrix or mortar, which would be in the proportion of about five to one,—a mortar which is strong enough for almost any purpose. This example shows the economy in the use of cement over a lime concrete, for whereas a lime concrete, for a foundation, for instance, would have to be composed of at least one of lime to four of aggregate, a considerably stronger concrete would be produced with one of Portland cement to eight of aggregate, and the cost would be found to be much about the same; but as the cement concrete has a greater strength, a lesser thickness would be necessary, and consequently an economical result would be obtained.

In conclusion, the lecturer referred to the process recently patented by him for accelerating the hardening of concrete, by which concrete made in the form of paving slabs, sills, ornamental panelling, &c., can be put to its respective uses when only two or three days old.

THE CONSTRUCTION OF THEATRES.

Sir,—From an observation made by Mr. Alex. Graham, in the latter portion of his letter in the *Builder* of last week, the public might be led to conclude that the Metropolitan Board of Works have not yet framed any regulations for the construction of theatres. I should like to point out that the Board drew up a code of regulations as far back as the 2nd of May, 1879, in the exercise of the powers conferred upon them by the Metropolis Management and Building Act Amendment Act, 1878, the Act giving the Board jurisdiction over theatres. These regulations, which prescribe a minimum width for staircases, corridors, passages, &c., and generally control the construction and materials to be employed in the building of theatres, are still in force, and all theatres built since the year 1879 have been constructed in accordance with these regulations.

Recent disasters to theatres abroad having directed the attention of the authorities charged with the supervision of theatres to the necessity of revising the regulations in force for the construction of theatres, which were found in many instances to have become obsolete, fresh and more stringent regulations were framed in the course of last year by the municipalities of the principal cities of the Continent. The Board have obtained translations of these new regulations, and the question of the revision of the present regulations is now under the consideration of the Board. John Hebb.

EXAMINATIONS AT THE SURVEYORS' INSTITUTION.

Of the candidates who had presented themselves for the Preliminary Examination held on the 23rd and 24th ult., the following passed the examination, and have been enrolled by the Council as Students of the Institution, viz.:—Messrs. John Arnott, Woodbridge, Suffolk; Harry Barratt, Stourbridge; Robert Alan Benson, Clifton; Walter de Hoghton Birch, Wootton-under-Edge, Gloucestershire; Herbert Wilson Buck, Worcester; Frank Wellington Carter, Salisbury; Henry Copley Clark, Dorking; Bernard Simon Dunning, Warwick-square; Sydney Newton Glass, Chiswick; William Timothy Hall, Maidstone; Sidney Pryce Harding, St. Albans, Herts; William Vincent Jull, Streatham Hill; Arthur Herbert Kerr, Crookham, Farnham; John Henry Mead, Balcombe, Hayward's Heath; Edward Mixer, Shepherd's Bush; James Pennington, Newbold-on-Avon, Rugby; Philip Edward Pilditch, Richmond, Surrey; John Baseley Selby,* Mornington-road, Regent's Park; John Henry Tiffen, Kingston-upon-Hull; James Bruce Watson, Tetsworth, Oxon; Thomas Willard, Rugby; and Percival Wraight, Anerley, S.E.

Higher examinations, qualifying for the classes of professional Associates and Fellows, will be held in the month of April next.

PROGRESS OF TELEGRAPHY.

In the course of a lecture on this subject at the Institution of Civil Engineers on the 15th inst., the lecturer, Mr. W. H. Preece, F.R.S., said,—The growth of business since the telegraphs have been acquired by the State is enormous: 126,000 messages per week have grown to an average of 603,000; but the mileage of wire has not increased in anything like the same proportion, the excess of traffic having been provided for by the great improvements made in the working capacity of the apparatus. In 1873, the average number of messages per mile of wire was 147, it is now 256. It is in press work that the greatest increase has taken place; 5,000 words per day at the time of the companies, have grown to 934,154 words per day now. 340,966,344 words of press matter were delivered in the year ending 31st March, 1882.

The development of railways has necessitated a corresponding increase in the telegraphs required to ensure the safety of the travelling public, and while 27,000 miles of wire in England, Scotland, and Wales were used for that purpose in 1869, at the end of December, 1882, the total had increased to 69,000 miles, equipped with 15,702 instruments, against 4,423 in 1869.

The growth of business is equally discernible in the great Cable Companies. In 1871, the number of messages dealt with by the Eastern Telegraph Company was 186,000; in 1881, it was 720,000. This growth is equally striking in all civilised countries, and even in Japan, 2,223,214 messages were despatched, of which 98 per cent. were in the native tongue. The mode of transacting the trade of the world has been revolutionised, and while wars have been rendered less possible, their conduct has been expedited, and their penalties alleviated.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

On Tuesday evening a meeting of this Association was held at the Queen's College, under the presidency of Mr. W. H. Kendrick, at which Mr. J. M. Gething, of Kidderminster, delivered a lecture on "Some Errors of Construction," illustrating the subject by a series of drawings. Messrs. Morgan, Bailey, Jones, Cleve, Mantel, Scruton, and F. Cross (hon. sec.) took part in the discussion which ensued, and supported a vote of thanks to the lecturer.

Mr. Gething considered the erection of an ordinary building, and following it, step by step, pointed out errors which had come under his observation:—*Foundations.*—Necessity for a uniformly yielding bottom, and spreading of the load; invert arches, their utility and best form; useless if they do not spread load better than the wall with its ordinary bond would do it, should be in cement because their duty commences at once. *Walls.*—Defects of incongruous materials; methods of dealing therewith considered; instances of failure; injury by plugging. *Floors.*—Trimmer arches; danger of fire. *Roof.*—Necessity of tie; disadvantage of severing the wall-plate; king-post trusts; parallelogram of forces as shown therein; the load being known, a scale made on one of the struts (extended) with which to measure the resultant strain on the king-pin, thrust at foot of principal rafter, cross strain on tie-beam, occasioned by footing the principal rafter off the wall. *Roof coverings.*—Tiles and slates; proper pitch and lap; necessity for bedding tiles,—bedding should not extend below the lap, because of retaining moisture. *Gutters.*—Lead, zinc, and iron; necessity for providing for expansion; drips in lead and zinc; sockets in iron; failures instanced,—in one of which, a wall coping, eighteen consecutive lengths were broken, by compression, at fixed standards. But out of between two and three hundred lengths not one was broken except at standards. *Beams.*—Compound and truss beams, joists a source of weakness; loss of elasticity and strength in flitch-plated beams; tension-trussed floor-beams, unfit to carry machinery because of their want of rigidity; difficulty of getting dissimilar materials to act in unison; homogeneous beams recommended. *Joiners' work.*—Necessity for allowance of shrinkage of panels, and, where exposed to damp, for expansion also; common failures and defects noticed; springing moulding into panels; difficulty of dealing with bolexion mouldings; split panels, &c.

THE TEACHING AT SCHOOLS OF ART.

The following letter is one among others that have been addressed to the Secretary of the Royal Commission on Technical Education, and will explain itself. We shall refer to the subject in uor next:—

Sir,—In reply to your letter dated the 8th inst., making inquiries as to the influence of the existing Science and Art classes available in this district upon the industry in which I am engaged (interior decoration in its various branches), I have to state my opinion as follows:—

(1.) Although a general advance has been made during the last thirty years, both in the taste of the public demand and in the design of objects produced, there is still a lamentable want of sound technical knowledge of the principles and practice of decorative art, particularly as applied to decorative painting.

The advance made is probably due to several causes.

1. The opportunity of comparison afforded by international exhibitions, and by the increased facilities for foreign trade and travel.

2. The establishment of museums and the exhibition of collections of applied art.

3. The establishment of Science and Art classes.

4. The influence of a few earnest and enterprising artists and employers.

The weak point in the advance is, that it is not accompanied by any extended knowledge of art; nor by such a sound knowledge of style as to facilitate healthy criticism; nor, in the case of decorative painting, is it accompanied by any advance in technical facility of execution. It is almost impossible to find a student in the schools of art with any competent knowledge of how to paint ornament for interior decoration, nor have the masters and teachers themselves the knowledge requisite for instructing them. In the schools of art the masters are interested in the encouragement of those studies which secure prizes or grants. The present tendency of the departmental system is to encourage the preparation of prize-winning drawings or other works, often at great sacrifice of time. Still-life painting receives too much attention and reward. There is a general want of training in rapid freehand drawing of ornament on a large scale.

(2.) As to the means of rendering the schools of art more useful.

a. The schools should be kept more closely to their original purpose as schools of design. Less encouragement should be given to the special preparation of laboured prize-drawings, and the most valuable awards should be made on a student's collective work for the year.

b. All Departmental prizes should be such as to assist an earnest student in prosecuting his work,—not such as to encourage the vanity of *dilettanti* students.

c. The number of petty prizes should be diminished, and "local scholarships" and "travelling studentships" multiplied; the local scholarships should be attainable in the several grades; and the higher-grade prizes should be open to those students only who show proficiency in the application of art to decorative purposes.

d. It would not at once be possible, but I would look forward to the time when it should be the necessary qualification of any head master of more than 100 students that he should have taken a travelling studentship, and spent not less than three months in the study of decorative art abroad. I entertain the strongest conviction (one which is shared largely by the principal employers of art workmen in London), that the present system of work in the various schools of art connected with the department requires extensive remodelling before it can render any real help of importance to art workmen or their employers. John G. Crace.

THE PAINTING AND DECORATING TRADE AND ITS SYSTEM.

Sir,—It is quite time that the attention of the nobility and gentry should be drawn to the above, and the deceptive manner in which it is carried on in London. In an excellent article in your valuable journal you drew the attention of the public to the present system of drapers' establishments taking to the above trades; but there are other firms, such as cabinet-makers, upholsterers, and house-furnishers, who profess to be painters and decorators, and even builders, and take the work to do, at the same time knowing that they have not one man of the building trade in their employ. After they obtain the contract or order for the work, they give it, or sublet it, to what is known as a trade shop. Should there be any new building or extensive alterations, that part is let to a building firm: by the time the work is finished there have been three or four fingers in the pie, which means a very heavy percentage above the ordinary charges of a firm employing all their own labour. Two or three firms could be mentioned that take thousands of pounds' worth of work annually; and it is all given to one firm that does the work of seven or eight other spurious decorating establishments. I am quite aware that there are several old-established cabinet-makers, &c., that take the above work; but they employ all their own labour under their respective foremen, with credit to the firm; at the same time I could mention nearly a score of these wrongly-termed decorators within a radius of three miles of Oxford-circus.

The profit that these firms make by doing the work in this manner is oftentimes enormous, and with no serious outlay themselves. But my lords and dukes are told, "We keep a special staff of men for that kind of work," and it answers the purpose. I should like to see or know the firm that keeps a staff of workmen when they have no work for them to do, or that will keep more cats than will catch mice. A Poor Painter.

BLACKMORE PARK.

Sir,—As subscribers to your paper, we hope you will find room in your next issue to mention that the firm of Bromwich, Foster, & Co., mentioned in yours of the 17th inst., as the builders of Blackmore Park, is the same firm as Foster & Dicksee. When the Blackmore contract was undertaken the firm *was* Bromwich, Foster, & Co.; when it was finished the firm was Foster & Dicksee.

Foster & Dicksee.

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* Passed at the head of the list.

TABULAR STATEMENT of the STATE OF TRADE and the LABOUR MARKET, January 1st, 1883.

The following Statement has just been issued by the National Association of Master Builders of Great Britain. (Mr. W. Knox, Secretary, No. 6, Lord-street, Liverpool). Towns marked thus (*) have not made any return since July, 1882:—

	STATE OF TRADE.	IN WHAT BRANCH.	SUPPLY OF LABOUR.	IN WHAT BRANCH.
ABERDEEN	Fair	All, except plumbers and plasterers dull	Good	In all branches, and painters abundant.
*ASHTON-UNDER-LYNE	Slack	All, except painters and plumbers, moderate	Good	All.
ALDERLEY EDGE	Quiet	All, except masons, bricklayers and joiners, slightly improved	Plentiful	All.
*ALTRINCHAM	Slack	All, except bricklayers, middling, and masons very bad	Plentiful	All.
*BEVERLEY	Slack	All, except plumbers, middling	Plentiful	All, except plumbers, sufficient.
BIRMINGHAM	Bad	All	Abundant	All.
BRADFORD	Dull	All	Plentiful	All.
BRISTOL	Active, but without prospect		Exceeding demand	All.
*BARNSLEY	Very bad	All, except painters, moderate	Plentiful	All, except painters, rather scarce.
BARROW	Slack	All	Ample	All.
*BOLTON	Quiet	All	Plentiful	All.
*BLACKBURN	Slack	All, except painters, moderate	Good	All.
CAMBRIDGE	Unusually slack	All	Plenty	All.
*CANTERBURY	Bad	All	Abundant	All.
*CHATHAM	Dull	All	Above the demand	All.
COVENTRY	Very quiet	All	Abundant	All.
CARDIFF	Fairly good	All	Plentiful	All.
CIRENCESTER	Slack	All	About sufficient	All.
*CHEADLE	Very quiet	All, except painters, good	Moderate	All, and masons, joiners, and plumbers plentiful.
CARLISLE	Dull	All	Plentiful	All.
*CHICHESTER	Fairly busy	All	Plentiful	All.
*CROYDON	Good	All, except bricklayers, fair, and joiners very good	Good	All, except bricklayers and joiners, greater than demand.
CUPAR, FIFE	Masons very dull, joiners and plumbers quiet, slaters busy, and plasterers fair	All	Above demand	All, except painters, not plentiful.
*CHORLEY	Bad	All	Plentiful	All.
CREWE	Improved	All	Good	All.
*CRIEFF	Brisk	All, except painters, very dull	Sufficient	All.
DALKEITH	Very dull	All	Plenty	All.
*DARLINGTON	Very bad	All, except painters, good	Abundant	All.
DERBY	Very slack	All	Abundant	All.
DONCASTER	Average	All	Plenty	All.
*DOVER	Dull	All	Good	All.
*DROYLSDEN	Masons and joiners dull, bricklayers, slaters, and plumbers, moderate, plasterers bad		Good	All, masons abundant, and joiners in excess of demand.
*DEVIZES	Bad	All, except plumbers and painters, moderate	Plentiful	All.
DORCHESTER	Very bad	All	Greatly in excess of demand	All.
*DUDLEY	Very quiet	All	Ample	All.
*DUNDEE	Painters slack	Painters plenty	Good	All.
DURHAM	Very dull	All	Plentiful	All.
*DUNSE	Bad	All, except slaters and plumbers, good	Greater than demand	All.
*ECCLES	Slack	All, except painters, moderate	Good	All.
EDINBURGH	Very quiet	All	Abundant	All, except masons, fair.
FOLKESTONE	Bad	All	Plentiful	All.
*GUILDFORD	Very dull	All	Plentiful	All.
GLOUCESTER	Quiet	All, except joiners, fair	Plentiful	All.
GLASGOW	Dull	All, except slaters fair, and bricklayers brisk	Plentiful	All.
GREENOCK	Middling	All	Plentiful	All.
GALASHIELS	Dull	All, except painters, fair	Good	All.
*HALIFAX	Masons, carpenters, and plumbers, very slack		Masons, carpenters, and plumbers, good	
*HELENSBURGH	Dull	All, but masons and bricklayers very dull	Plentiful	All, except plumbers, moderate
*HOLMFIRTH		Carpenters fair, masons dull, and plasterers fair	Good	Only carpenters, masons, and plasterers given.
*HAWICK	Masons moderate, joiners and plasterers very slack	Painters bad, and plumbers and slaters fairly busy	Good	All.
*HARTLEPOOLS	Masons and bricklayers moderate, joiners improving, plasterers and plumbers good, painters dull		Plenty	All.

	STATE OF TRADE.	IN WHAT BRANCH.	SUPPLY OF LABOUR.	IN WHAT BRANCH.
*HARTFORD	Slack	All	Good	All.
HASTINGS	Dull	All	Generally in excess of demand	All.
*HULL	Slightly improving	All, except plumbers, very quiet, & painters moderate	Plentiful	All.
HAMILTON	Very slack	All	Plentiful	All.
HUDDERSFIELD	Bad	All	Good	All.
INVERNESS	Very slack	All	Scarce	All.
*KIDDERMINSTER	Very quiet	All	Abundant	All.
LONDON	Very bad	All	Ample	All.
*LEICESTER	Exceedingly dull and quiet	All	Ample	All.
LIVERPOOL	Quiet	All	Abundant	All.
LANCASTER	Slack	All	Plentiful	All.
LEWES	Exceedingly dull	All	Plentiful	All.
LEITH	Very quiet	All	Plentiful	All.
LINCOLN	Depressed	All	Abundant	All.
LEEDS	Bad	All, except plumbers and painters, moderate	Plentiful	All.
MACCLESFIELD	Quiet	All	Good	All.
MANCHESTER	Slack	All	Plentiful	All.
*MIRFIELD	Quiet	All	Good	All.
MONTROSE	Slack	All	Good	All.
NORTHAMPTON	Slack	All, and masons very slack	Abundant	All.
*NORTHWICH	Slack	All	Good	All.
*NEWPORT	Very bad	All	Plentiful	All.
NOTTINGHAM	Good	All, plumbers very busy		Plumbers plentiful.
NORTH SHIELDS	Slightly improving	All	Plenty	All.
*OXFORD	Slack	All	Ample	All.
OLDHAM	Slack	All	Plentiful	All.
PERTH	Dull	All, except plumbers and joiners, fair	Ample	All.
PORTSMOUTH	Quiet	All	Equal to demand	All.
*PONTEFRACT	Very bad	All	Exceeds demand	All.
PRESTON	Moderate	All	Moderate	All.
PLYMOUTH	Quiet	All, except plumbers, good	Ample	
*PAISLEY	Dull	All, bricklayers and slaters good, and joiners and plumbers fair	Plenty	All, except joiners, good.
*RADCLIFFE	Middling	All	Plentiful	All.
*RUNCORN	Bad	All, except plumbers, middling	Plentiful	All.
ROCHDALE	Slack	All	Good	All.
READING	Moderate	All	Plentiful	All.
RUGBY	Dull	All	Plentiful	All.
*ST. ANDREWS	Quiet	All, except painters, fair	Good	All, except painters and slaters, fair.
*SALISBURY	Depressed	All, except carpenters, fair	Plentiful	All.
SCARBOROUGH	Bad	All	Plentiful	All.
*STAFFORDSHIRE POTTERIES AND NEWCASTLE DISTRICT	Very dull, and no prospect of revival		Masons and bricklayers plentiful, & carpenters in excess of demand	
SOUTHAMPTON	Little doing	All	Plentiful	
ST. HELENS	Moderate	All	Plentiful	All.
SHREWSBURY	Fair	All	Abundant	All.
*STIRLING	Dull	All, except plasterers and slaters busy	Plenty	All.
*STALEYBRIDGE	Bad	All, except plumbers and painters, fair	Plentiful	All, except plumbers and painters, moderate.
SOUTH SHIELDS	Middling	All	Plenty	All.
SOUTHPORT	Very quiet	All	Abundant	All.
*SUNDERLAND	Fair	All, except plasterers, masons, and bricklayers, very slack, and painters good	Plentiful	All, except joiners, good, and painters fair.
SHEFFIELD	Very bad	All	Abundant	All.
*TAUNTON	Slack	All	Sufficient	All.
WOLVERHAMPTON	Very bad	All	Plentiful	All.
*WESTON-SUPER-MARE	Fair	All	Plentiful	All.
*WIDNES	Very slack	All	Plentiful	All.
WALSALL	Slack	All	Plentiful	All.
WIGAN	Very slack	All	Plentiful	All.
WEYMOUTH	Slack	All	Abundant	All.
*WAKEFIELD	Slack	All	Plentiful	All.
WINCHESTER	Not stated	Not stated	Plentiful	All.
WARRINGTON	Moderate	All, except masons slack, and bricklayers and joiners fair	Plentiful	All.
*WORCESTER	Slack	All	Plentiful	All.
*WHITEHAVEN	Bad	All	Good	All.
WEST BROMWICH	Slack	All	Plentiful	All.
YORK	Slack	All	Plentiful	All, except slaters, scarce.

Notice of Alteration in the Rate of Wages and Hours of Labour.—BIRMINGHAM.—The bricklayers demand advance of ½d. per hour, and sundry alterations in working rules, including notice of abolition of arbitration. The bricklayers' labourers demand an advance of ½d. per hour, and joiners an advance of ½d. per hour, and sundry alterations in working rules, including notice of abolition of arbitration. The plasterers demand an advance of ½d. per hour and alteration in working rules. The employers have replied by handing back existing rules as

THE SANITATION OF RUSSIAN TOWNS.

The question of sanitation, so important to the densely populated cities of the West of Europe, was not, up to quite recently, one concerning which even large Russian cities troubled themselves much. Russian towns, as a rule, are straggling, and cover a large area. The houses are mostly one or at most two stories high, and a large yard being attached to each house, they are built at some distance from each other. The streets are very broad; in the very centre of towns there were (and in the smaller towns there are up to the present day) large uncultivated and unused spaces. With the exception of St. Petersburg, Moscow, Odessa, Kieff, and a few others, up to within quite recent years even the larger cities had neither pavement nor a water supply. Even in the cities mentioned (excepting, again, Odessa, which may be called a pattern Russian town, as far as order is concerned) the state of the paving and the supply of water are not at all satisfactory. All this explains sufficiently why the subject of sanitation was, until lately, a matter unknown in Russian towns.

The question became a burning one first for St. Petersburg, built, it is well known, on a vast morass, the statistics of mortality of which are so abnormal that, were it not for the continuous immigration from the provinces, it would long ago have been a deserted city. After a great portion of the town had been supplied with Neva water, and the use of water-closets had become general, the evils attaching to the traditional night-soil wells became more striking. While subterranean wooden or stone channels exist for carrying off surface water into the Neva, the night-soil accumulated in the wells is daily moved out of the city in barrels, and deposited outside its boundary. The level nature of the ground on which the capital is built and the high level of the underground water present very great difficulties, and point to the pneumatic system as the only true solution. An experimental station was, with this view, erected on Semyonoff-square, and trials were made on M. Liernur's plan, in the first place, with the barracks there. The results were very satisfactory; but, although the system tried found much favour, the authorities do not appear to be in a hurry to apply it to the whole of St. Petersburg, on the ground, seemingly, that it has given rise to much complaint in some small Dutch towns. Another sanitary engineer, M. Bouroff, is also experimenting in St. Petersburg with a pneumatic system, differing from that of Liernur only in detail. Thus he does not connect the street sewers direct with the closets, but with the night-soil wells. He also employs a steam aspirator, for creating a vacuum, &c.; but nothing definite has as yet resulted from his experiments. The question is consequently still in the experimental and controversial stage at St. Petersburg.

Moscow has made greater progress in this respect. There it was at once recognised that the flushing system was the most practicable. Preliminary inquiries have been made in detail, and the city authorities are even said to be in possession of a plan prepared by Baurath Hobrecht, of Berlin. But its execution does not seem to progress very quickly, for Prince Dolgoroukou, the governor-general, has requested the central government to take charge of the important question of a sewerage system for Moscow, and to appoint a commission consisting of representatives of the city, the county (*zemstvo*), the government, and technical societies.

Odessa, which enjoys the reputation of being the best paved city in the whole of Russia, and which possesses a capital water supply, is also the best drained city. Its sewers are constructed on the flushing principle, but it is a cause for regret that the system does not comprise the whole of the city, the outer parts of the town not being included in the network of canals. The fact is, the system is not obligatory, each house-owner being free to adhere to it or to continue in his house the old abominable plan of cesspools; in the former case, however, he has to subscribe to certain conditions of a technical nature. But all the good that is effected by the excellent sewerage of Odessa is almost rendered nugatory by the circumstance, that the outfall of the main sewer is in the middle of the harbour, close to the public bathing establishments!

In the oldest of Russian cities,—venerable Kieff,—serious attention was first drawn to the question of canalisation a few years ago, when it was found from the death-rate statistics of the town (which is situated in a most charming position on the high hills bordering the river Dnjepr, here both wide and rapid in its course) that the rate of mortality was unusually high,—over 38 per 1,000 in a population of nearly 200,000 souls. A commission, consisting of engineers and physicians, was appointed by the municipality in 1879, who submitted an exhaustive report, in which they embodied the following resolutions:—(1) That the sanitary condition of the city was one full of apprehension. (2) That the cause of this state of things must be sought in the pollution of the soil and the underground water by night-soil wells. (3) That a flushing system is the best mode of cleansing the hilly town of Kieff, although the preparation of irrigation areas would cause difficulties. (4) That the annual outlay for keeping the sewers in order, and for interest and amortisation, would be less than the present cost of removal. (5) That a separate network of sewers is to be constructed for carrying off surface water, but only in the principal streets. (6) That the question of expense could be solved correctly only after the completion of the preliminary works, but that it might be stated that the total cost would not be more than 2½ million roubles (15 to 20 roubles per head of the population).

The town council agreed to this report of the special commission, and ordered preliminary works to be commenced. During last summer those works, of a topographical, geological, and statistical nature, were actively prosecuted; and at the present time plans and tables are being prepared with a view of drawing up the final project. Thus the matter of sewerage is in a fair way of being settled at Kieff. There is, however, a law in Russia which forbids the pollution of public water-courses. Now, the municipality of Kieff is on the point of asking permission for carrying the sewage of the town to a certain distance below it, and there construct an outfall into the Dnjepr. If it is considered that this river has a velocity of 0·75 mètre with a volume of water of over 200 cubic mètres per second, and that its riparian population is very thinly scattered, it is thought that such a proposal will carry no hidden danger. On the other hand, the preparation of irrigation areas, available only far from the city and at a height of nearly 80 mètres above the collecting basin, would increase the expense to such an extent that it may well be said that the next phase of the canalisation of Kieff depends upon the decision of the Government, in regard to which it may be said that a similar consent was given in the case of Warsaw.

In that city the works for a system of sewerage by flushing, with an outfall into the Vistula, are in course of execution, after plans by Mr. Lindley. At Warsaw, as elsewhere, the subject gave rise to much discussion, and it remains yet to be seen whether the solution of the question by an outfall into the river is the correct one. Grave doubts are entertained on that point, but, at any rate, Warsaw will soon have a rational system of sewerage in operation, and defects, should there be any, will probably be satisfactorily remedied.

The question of sanitation has been mooted in several other smaller Russian towns,—at Charkoff, for instance, and elsewhere; but it has not yet emerged from the stage of municipal discussion. But there is no doubt that the public interest has been aroused, and a number of engineers are working hard to keep it alive, to extend it, and to cause it to bear practical results. Lectures on the sanitation of towns are being delivered in scientific circles; the organs of learned societies are full of papers on the subject, which are partly reprinted in popular form in the daily journals; and everything is being done to promote a movement upon which depend the health and well-being of the populations of Russian towns.

We are indebted for the above particulars to a valued German contemporary, the *Gesundheits Ingenieur.*

Hygienic Dress.—An exhibition of hygienic dress, decoration, and sanitary domestic appliances, under the auspices of the National Health Society, is to be held in June next, in the Knightsbridge Hall. Miss Lankester, of 44, Berners-street, will give any information desired.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

705. W. Russell, Pendleton. Kitchen ranges and stoves. Feb. 9, 1883.

712. G. Ermen, Holcombe. Fireplaces, stoves, and grates. Feb. 9, 1883.

714. S. Deards, Harlow. Apparatus for warming houses. Feb. 9, 1883.

753. J. H. Johnson, London. Machinery for sawing, polishing, &c., stone marble, &c. (Com. by G. Westinghouse, Pittsburg, U.S.A.) Feb. 10, 1883.

762. A. Codd, London. Prevention of water waste and flushing cistern. Feb. 12, 1883.

803. W. Mullett, Brierley Hill. Construction of walls for buildings to prevent damp. Feb. 14, 1883.

812. H. Thompson, London. Domestic stoves and grates. Feb. 14, 1883.

826. W. Blakely, Bournemouth. Preventing the radiation of heat through the roofs of houses, &c. Feb. 14, 1883.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Feb. 13, 1883.

4,980. H. McRuer, Glasgow. Cooking-ranges. Oct. 19, 1882.

5,124. A. W. L. Reddie, London. Alarm-bells for doors, &c. (Com. by E. J. Masseron, Paris.) Oct. 27, 1882.

5,301. R. G. Hodgetts, Birmingham. Manufacture and ornamentation of metallic furniture. Nov. 6, 1882.

Feb. 16, 1883.

4,875. E. Guattari, London. Preventing the surreptitious opening of doors and windows. Oct. 13, 1882.

ABRIDGMENTS OF SPECIFICATIONS.

Published during the Week ending February 17, 1883.

2,973. R. Boyle, London. Ventilators for buildings, &c. June 22, 1882. Price 6d.

This consists of various arrangements of the deflectors in ventilators.

3,000. G. Dawson and C. Butcher, Thorncliffe. Kitchen ranges. June 24, 1882. Price 6d.

This consists in making these ranges self-contained and independent of any brickwork, and allowing air to pass through the furnace-door to circulate round the oven, &c.

3,034. F. A. Bonnefin, London. Receiving and collecting excrementitious and other foul and waste solid and liquid matter in houses, &c. June 27, 1882. Price 6d.

The solid and liquid matters are divided from one another, and collected and separated in a receiver in the bottom of the house.

3,096. H. Conolly, London. Water-waste preventers. June 30, 1882. Price 6d.

The cistern is fitted with a syphon consisting of the discharge-pipe rising up through the bottom of the cistern, covered with a cap which forms the short leg. The top of the cap is enlarged by a shoulder which prevents the water falling back noisily into the cistern when the flush is ended, and a small pipe descends from this shoulder to allow air to enter the syphon when the flush is nearly ended, and gradually to finish the same. The displacer is a floating body formed round a tube rising up in the cistern, and the pull passes through the bottom of the cistern up through this tube, and is connected to the top of the displacer. When the displacer is pulled down into the water the syphonic action is established. The supply-pipe is led to the bottom of the cistern to obviate any noise from the inrush of water.

3,110. J. Brownrigg, Windermere. Door furniture. July 1, 1882. Price 4d.

A spring washer is passed over the spindle on to the adjusting nut, and the knob is screwed up tight against it.

3,116. E. V. Emery, London. Venetian blinds. July 1, 1882. Price 2d.

The cords pass through pieces of india-rubber attashed to the laths, so that when the cords are pulled the latter are lifted, and collect at the top instead of at the bottom of the blind. (*Pro. Pro.*)

3,127. G. Hodson, Loughborough. Manufacturer of artificial stone or concrete. July 3, 1882. Price 2d.

The stone is made with Portland cement coloured by natural oxide of iron. (*Pro. Pro.*)

3,145. C. Priestland, Birmingham. Rack-pulleys for blind-cords. July 4, 1882. Price 6d.

The rack-teeth are cut in the sides of the carrier slides in which the tooth of the pulley-frame engages.

3,168. M. Kellow, Merioneth. Cutting and dressing stone. July 5, 1882. Price 2d.

The cutters are square bars of steel mounted on a disc which is rotated. (*Pro. Pro.*)

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* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

3,191. W. C. Gibson, Newcastle. Manufacture of bricks, &c. July 6, 1882. Price 2d.

The bricks are coated with glaze in their damp state and then pressed. (*Pro. Pro.*)

3,316. W. R. Lake, London. Conduits for gas and water, &c. (Com. by A. Kerandt, Essen, Germany.) July 12, 1882. Price 2d.

These are made of corrugated metal tubes or cylinders.

5,197. W. R. Lake, London. Apparatus for flushing water-closets, &c. (Com. by J. Cooper, Boston, U.S.A.) Oct. 31, 1882. Price 4d.

The tank is divided into two parts by a horizontal partition. A double-faced valve fits the seats on the partition, and on the bottom of the tank. When this is lifted it allows the water in the lower part to flow down to the closet, and when the valve is released it is checked in its descent by the air in an annular cylinder surrounding the discharge-pipe from which the air is only allowed to pass out very slowly. The water from the upper part of the tank, therefore, also passes down the discharge-pipe.

A CONCRETE VAULT FOR HEAVY LOADS.

The drain of a manufactory at Gernsbach (Baden) has just been covered in with a vault constructed of concrete, of unusual dimensions, and intended to bear a very heavy load. According to the *Deutsche Bauzeitung*, the vault is 184 ft. long, in the form of a three-centred arch of a span of 24 ft., has a rise of 8 ft., and a thickness in the crown of 1 ft. 10 in. In the spring of the arch, an upper as well as a lower boarding was employed in making it. The vault was constructed in lengths of 15 ft. The concrete was stamped in as nearly as possible in the radial direction of the arch. The mixture used consisted of one part of Portland cement, five parts of broken granite, and two parts of clean sharp quartz sand. The cost was about 21s. per cubic yard. For the abutments and the inclosure walls, another mixture was employed, which consisted of one part of cement, seven parts of broken granite, and two parts of quartz sand, and cost 15s. per cubic yard. Upon the face of the arch rises the facing wall of the building erected on it, which, including the roof, represents a weight of 42 tons. The vault is loaded, further, by a steam boiler and a soda boiler to the extent of nearly 2 tons per square yard of surface.

THE NEW TECHNICAL COLLEGE AT FINSBURY.

The New Technical College which has been erected by the City and Guilds of London Institute in Tabernacle-row, City-road, was opened on Monday last, when Mr. Philip Magnus delivered the inaugural lecture. The building is of brick and stone, solidly and practically designed by the architect, Mr. E. N. Clifton, who built the Cowper-street Schools, in the rear of the college, which have served for some time past as a temporary habitation for the large and increasing body of students. In special details the architect has been assisted by the suggestions of the director of the Institute and present principal of the college, Mr. Philip Magnus, and the professors at the head of the various departments. One of the rooms set aside for delicate physical experiments is worthy of remark as being fitted with isolated tables or piers rising through holes in the floor, from which and the rest of the building they are entirely disconnected, with the object of avoiding any disturbance to which the general edifice may be subjected. This room is situated on the ground floor, which is divided into numerous large rooms for various departments of physics, for the making and alteration of apparatus, for drawing of various kinds, and so forth. Most of the rooms have plain granitic brick walls, without plaster or ornament of any kind to distract the attention from study. In the so-called brewing-room, the room for metallurgical work, and other apartments of the basement, the walls are lined with white enamelled brick, for the double reason that the surface resists humidity and reflects instead of absorbing light. The basement is fitted with the gas and steam engines, boilers, and furnaces necessary for the lighting, warming, ventilation, and general service of the building, all this machinery being arranged in ample space, so that students may be instructed in its management and taught to draw and thoroughly understand its various parts. The lighting of the building will be divided between the Siemens' gas and the electric light on the Edison system. The upper floors are devoted to class-rooms, lecture-rooms, each capable of holding 200 students, and to the great chemical laboratory already described. The amount of labour required to plan and construct a building for the special purposes already enumerated can hardly be over-estimated; yet the work has not only been done well but quickly. It is not two years since the building of the college was finally decided upon, and only a year and three-quarters since the Duke of Albany laid the foundation-stone. We may have more to say about the building on a future occasion.

Mr. Magnus, in the course of the opening lecture, before mentioned, said that the majority of people took a very narrow view of the extension of technical education, while others were unable to understand the different kinds of training to which it was applicable. He proposed to call that training, education, or instruction, technical which had direct reference to the career of the student who received it, whether he were engineer, weaver, manufacturing chemist, or cabinetmaker. If he were asked to state in a word what had given rise to the necessity for technical education in the narrower signification of the term, he should answer, the invention of the steam-engine, as it was to that primarily that we owed production on a large scale, which, in its turn, had lead to the breaking-up of the apprenticeship system, thus necessitating some other kind of training. In the development of this scheme of technical education, every improvement made in elementary and intermediate instruction would facilitate the work, and he thought one important step would be to have drawing better taught to the children in primary schools; while in Manchester a good example had been set by the children being practically instructed in the use of ordinary tools in woodwork. The college would consist really of a day-school which would fit the student for engineering or the workshop, and an evening-school, which was intended to help those already engaged in the various industries in understanding the processes underlying their daily work. It would also receive pupils from the middle schools, and while the majority of them would complete their education there, the others would be enabled to proceed by means of scholarships to the central school at South Kensington. It was not to be a school where any actual trade would be taught, but a means by which workmen might supplement their education and their knowledge of the work in which they were engaged. Every pupil on entering would declare to what industry he wished to apply himself, and then he would find a course of instruction drawn out for him on the indicated lines.

HOUSE DECORATORS' CLUB AND INSTITUTE COMPANY.

The second annual general meeting of this company was held on Thursday evening, the 15th inst., in the large billiard-room of the club, 19, Howland-street, Tottenham-court-road, the necessary alterations to the general meeting-room not having been completed; plans for these alterations have been generously given by Mr. Lewis P. Crace, of Wigmore-street.

The report, showing that the club had been opened since January 1st, and that no liabilities had been incurred up to the date of report but what were doubly covered by the calls on shareholders now being made, and that their success was largely due to the aid given by the trustees, Messrs. J. G. Crace and J. H. Donaldson, was, after some discussion, adopted, the directors explaining that the high salary now paid to the secretary was to be only during the organisation of the club. The secretary, treasurer, and auditors were then re-elected; a sum of 30s. being voted to the last-named for their services.

The board of directors was reduced to twelve, three of the retiring directors and others being elected to complete that number. A hearty vote of thanks was given to the directors, they refusing any remuneration for their services.

The Chairman (Mr. J. H. Donaldson), replying to the usual vote of thanks, said he was very pleased to have met them in their own place, and he had additional hope for their ultimate success from the careful manner in which they had discussed their balance-sheet that evening. He was very deeply interested in the welfare of the working-man, as, with a large number of them his own interests were at all times bound up. He would endeavour to secure for them the services of gentlemen of ability to deliver lectures on matters connected with their trade, and meanwhile would call special attention to the very interesting lectures on the history of ornament about to be delivered by Dr. Zerffi at the Painters' Hall, under the auspices of the Painters' Company. He has ventured that day to send them a number of book as the nucleus of a library, and he would promise to follow this up by sending works of a technical character selected with a view to place within reach of all the members the best obtainable information relating to their trade.

After the meeting the members visited the reading-room to see the books referred to,—a goodly array of thirty-one volumes of the works of Dickens, together with the poems of Scott and Hood. The poems of Burns have already been presented by a member, while over the chimney-piece is a neatly-framed illustration from the *Builder* of the staircase at Mercers' Hall, given by one of the members engaged on the work there.

The Phœnix Society and the Society of United Brothers, two of the very oldest benefit societies connected with the trade, now hold their weekly meetings at the club.

The co-operation of employers or operative decorators is invited either by taking up shares or becoming members of the club.

SMOKE AND WESTMINSTER ABBEY.

Sir,—The Council of the Smoke Abatement Institute have forwarded a memorial to the Home Secretary, requesting him to urge upon the magistrates the necessity of using to the full the powers they possess of inflicting fines and repeated penalties on offending manufacturers, who are responsible for the rapid decay of the stone of such buildings as the Abbey, Lambeth Palace, and the Houses of Parliament. If Sir W. V. Harcourt and his ædiles will enforce the prayer of the petitioners, it is certain that a clearer atmosphere will result. But what then? Will not the *invisible* gases which are known to result from coal combustion, salt glazing of pottery, gas-making, and numerous other operations, be more destructive than ever to buildings constructed of calcareous stone? It is true that the memorialists mention noxious vapours from workshop furnaces as well as smoke, but, as far as I am aware, they have hitherto confined their most laudable efforts solely to the complete combustion of coal. To the general public this would, doubtless, appear an all-sufficient boon. The Duke of Westminster, Mr. Hart, Lord Algernon Percy, and the other memorialists, however, refer to the rapid destruction of the public buildings by these powerful gases,—hydrochloric, carburetted hydrogen, sulphuric, ammonia; and if they are to be protected from further injury, I apprehend that special means beyond the perfect combustion of fuel are necessary.

The unconsumed carbon deposited on our public edifices, though very injurious to their architectural effect, and very offensive to the eye, is a comparatively innocent offender in destroying them. The gases I have referred to are the real culprits. When Dr. McCormack in 1872 analysed an old piece of stone from Lambeth Palace, it was hydrochloric acid,—an invisible enemy,—that he discovered some inches below the surface, and to that extent the cementing ingredients had been entirely destroyed. Analysis would show the same result with stone from the Palace and Abbey in Westminster, and all other buildings of calcareous stone.

There can be little doubt as to the possibility of destroying these invisible enemies to the architect and his works, but I fear that if Mr. Hart and his friends should clear the London atmosphere of smoke they will, naturally enough, feel that they have completed their difficult task; but then our freestone buildings will still go on decaying.

As, therefore, under the most favourable circumstances, it must be years before the London atmosphere will be restored to something like its normal purity, I venture to invite the rising generation of architects to turn their attention to the use of materials of known durability in London and of an appropriate pre-Renaissance style, the characteristic of which must be colour as opposed to carving and moulding, and of which Italy and the East furnish numerous examples. The materials I refer to lie, so to speak, at our very doors, and indeed are occasionally used for special architectural effect. If these red, white, and grey granite, porphyries, green serpentines, and black basalts were applied in construction in a manner similar to ornamental brickwork instead of the present Greco-monolithic method of using them, an architectural style, not only novel but of everlasting durability, and without extra cost when compared with carved and moulded stonework would be the result. The importance of some such movement as I venture to recommend is strongly enforced by the statement of the Chief Commissioner of Public Works, Mr. Shaw-Lefevre, that 2,500*l.* are annually spent in repairing the stone of the Houses of Parliament.

Henry Travis.

AN APPEAL TO THE BENEVOLENT.

Sir,—Knowing how widely your paper is circulated among those who know only too well the dangers attendant upon sewer work, will you kindly allow me, through the medium of your columns, to appeal to the sympathy and generosity of the benevolent public of a wider sphere than our own immediate neighbourhood for assistance towards the relief of the widow and fatherless children of the late William Young, who met with an untimely death on the 6th inst. by a quantity of earth falling upon him when working in a sewer heading.

He had been in the service of the Folkestone Corporation for many years, and was highly respected both by his employers and fellow-workmen. He was a temperate, industrious, energetic, and skilful workman, ever ready to lend a helping hand (especially in cases of emergency), and indefatigable in his services as a fireman.

His awfully sudden death is, I am sorry to have to state, not the only cause which awakens our sympathy; the poor fellow went home to his tea at five o'clock, when he found his wife had been confined in the afternoon; he returned to his work, and shortly after six p.m. was a corpse, thus leaving a widow with seven children totally unprovided for. She naturally will not be able for some little time to contribute anything towards their maintenance, but I feel sure, she being a hardworking woman, will, with the assistance of kind friends, fill the place of the deceased towards her children.

His Worship, the Mayor of Folkestone (Mr. J. Sherwood, 3, Sandgate-road), and the Rev. R. Foster Jeffrey, 25, Brockman-road, have kindly offered to receive subscriptions, and which I most earnestly solicit on behalf of the widow and orphans.

They will also be thankfully received by me, at my Office, Dover-road, and duly acknowledged in the public press.

A. W. Conquest, *Borough Engineer.*

Folkestone.

BOOK-KEEPING COMPETITION.

Sir,—In consequence of a notice in your paper of a prize to be offered by the Royal Agricultural Society of England, I sent in a plan of book-keeping suitable for farm accounts.

I now enclose the circular of the judges, who have found that none of the plans were good or simple enough to meet the requirements of the ordinary farmer.

May I be allowed to point out that the failure in this, as in so many competitions, arises from the want of distinct regulations or information as to the actual requirements of the case?

You will observe that there are but two short heads, and having got the plans, the judges then proceed to lay down two more rules which should have appeared at first, viz.:—

3. That the accounts be adapted to a mixed farm of 200 to 300 acres.
4. That they be on the columnar system.

I venture to suggest that if they will offer another prize with these additions they will meet with success.

Accountant.

GAS *v.* VEGETATION.

Sir,—Mr. Killingworth Hedges, C.E., appears to have forgotten that there are a large number of gas-heating and cooking stoves, &c., and many hundreds of gas-burners alight daily in the Crystal Palace, besides the suspending lamps used for lighting the south nave, &c.; in fact, there is sufficient gas consumed in the building daily to properly light many such buildings. I do not agree with Mr. Hedges's remarks respecting cheapened gas-lighting; they may be correct as far as regenerative burners are concerned, but these are mostly used for street-lighting. If Mr. Hedges will test them he will, I think, find that an improved flat-flame burner does not produce so much heat as the old fish-tail burner, although it gives much more light with the same amount of gas.

Arthur Clarke.

CHURCH-BUILDING NEWS.

Balsall Heath.—The church of St. Thomas-in-the-Moors, Cox-street West, Balsall Heath, has been opened for Divine worship, but its consecration by the Bishop of Worcester has been deferred until the building has been enlarged and an ecclesiastical parish constituted. The church was built out of funds bequeathed for the purpose by the eminent surgeon, the late Mr. Sands Cox. The foundation-stone was laid about fifteen years ago, but little progress was made until two or three years afterwards, when Mr. Sands Cox died, and left the sum of 3,000*l.* to complete the church, provide a memorial east window, and form an endowment for the future incumbent. When the church was built, grave difficulties at once presented themselves, arising out of the fact that Mr. Sands Cox had executed two trusts, one relating to the site and the other to the patronage. As the former trust included the church, it was found necessary to amalgamate the trusts, and in order to do this, application had to be made to the courts of law. A considerable time elapsed before sanction was obtained for placing the patronage of the fabric in the hands of the same trustees, but eventually this object was accomplished. At present the building, which is a plain brick structure, only consists of the nave and aisles, with a small chancel and vestry, and the accommodation is very limited. It is proposed to extend the nave and chancel, and, if space allows, to add transepts and an organ-chamber. Increased accommodation will be provided for 200 more worshippers. About 1,000*l.* is the sum required to enlarge the church, and it is expected that it will be finished by Midsummer.

Plymouth.—A parclose screen has just been added to the internal fittings of St. Peter's Church, Plymouth. It stands upon the south side, and fills the whole of the eastern bay of that arcade. The extreme height of the screen is 23 ft., and its width 15 ft. The lower portions,—that is, the columns and carved capitals which surmount them,—are of red Corsehill (Scotch) stone, whilst the dwarf wall below them, and all the rich tracery work above, are of Bath stone. The style of work is, of course, of the "early" type which pervades the whole building. The screen, like the alabaster and metal rood-screen recently erected, is the handiwork of Mr. Harry Hems, of Exeter. A third screen is in Mr. Hems's hands, and will be fixed after Easter immediately in front of the organ. It is of similar character to the one just finished. These screens have been carried out from the designs and under the personal supervision of Mr. George H. Fellowes Prynne, architect, London.

Miscellanea.

New Harbour Works at Genoa.—The defective harbour accommodation of Genoa has long been a subject of complaint. To meet this want most extensive works are in course of execution. At present the quays of Genoa Harbour are only 26 ft. wide, and its moles narrow, so that vessels are compelled to unload into smaller lighters in the open roadsteads. It is proposed to construct six new moles, each 660 ft. long and 330 ft. wide, and to widen the quays to 495 ft. Large warehouses are to be erected on the quays, and connected by a branch railway with the central terminus of Genoa at San Pier d'Arena. The estimated cost is 1,560,000*l.*, 800,000*l.* of which are covered by a legacy left by the late Duke of Galliera. The works are expected to be completed by 1888. The need for enlarged harbour accommodation for Genoa will be understood when it is stated that in 1880 the tonnage which entered the port was 1,200,000 tons.

The International Electric Exhibition, Vienna, 1883.—His Imperial Majesty the Emperor Francis Josephus has been pleased to order the artistical establishment of Carl Giani to produce a pavilion for the electric exhibition. This pavilion is, according to the intentions of his Imperial Majesty, for the purpose of demonstrating the effects of electric light on richly-worked draperies and embroideries. According to the plans, already in progress, this pavilion, for which the exhibition is entirely indebted to the munificence of his Majesty, will be of considerable dimensions, and carried out in a pure architectonic style well suited for the purpose, and richly decorated with precious stuffs. It will be arranged for the alternate application of different systems of electric light in order to show their relative effects.

A New Hospital for Darlington.—As will be remembered by some of our readers, we called attention some three years or so ago to the unsatisfactory state of the present building, and we have now much pleasure in stating that a new hospital is to be erected forthwith. At a largely-attended meeting of the committee, held on the 16th inst., it was moved and seconded that local architects be invited to submit designs in competition. The motion was, however, lost, and Mr. G. G. Hoskins was appointed architect for the new building.

The Bedford Park Estate.—Mr. J. Donkin writes from the Bedford Park Estate Office, Chiswick, to correct a statement of *The Medical Press*, to which we gave publicity last week under the head of "Builders' Eccentricities." He says the statement that the larders are invariably next water-closets, and that in the majority of cases the doors opening into the injecta and ejecta respectively are directly contiguous, is untrue. In no single instance that he knows of are the doors of such places planned contiguous or near each other.

School Board Schools in Glasgow.—New Board Schools in Dennistoun and John-street, Bridgeton, in the east end of Glasgow, were opened on the 10th inst. by the Right Hon. Lord Young. From a statement made at the meeting by Mr. Fife, convener of the Property Committee, we learn that the site for John-street School extends to 3,989 square yards, the whole of which is available for building. Mr. William Landless, architect, by the plans prepared has utilised the ground as follows, namely:—School buildings, 1,012 square yards; playground and offices, 2,977 square yards—total, 3,989 square yards. The total accommodation provided is for 1,149 scholars, allowing 8 square feet for infants and 10 square feet for the older scholars. This school and the one at Dennistoun are the first schools that have been built in the city according to the most recent requirements of the Scotch Education Department. The plans were transmitted to the Scotch Education Department on the 1st February, 1881, and returned, along with the specifications approved of, on May 15, 1881. Offers for the principal artificers' work were accepted on June 17, 1881, viz.:—1, Mason work (Mr. Alex. Muir), 4,599*l.*; 2, joiner work (Messrs. Macaulay & M'Gibbon), 2,640*l.*; and other trades bring up the total to 9,561*l.* 3s. 5½d. Mr. Landless, architect, has added to this amount—for furniture, architect's fees, &c., the sum of 1,200*l.* The cost of the buildings will be equal to 9*l.* 7s. 7¾d. per scholar. The site for the school cost, including legal expenses, the sum of 7,047*l.* 9s. 11d. The total cost of the site and buildings is 17,808*l.* 13s. 4½d., which is equal to 15*l.* 9s. 11¾d. per scholar. The site for Dennistoun School extends to 4,529 square yards, of which 3,300 are building ground. Messrs. James Salmon & Son, architects, by the plans prepared have utilised the building ground as follows, namely:—School buildings, 1,000 square yards; playground and offices, 2,300 square yards—total, 3,300 square yards. The total accommodation provided is for 1,050 scholars—allowing 8 square feet for infants and 10 square feet for the older scholars. As already stated, this school, and the one at John-street, Bridgeton, are the first schools that have been built in the city according to the most recent requirements of the Scotch Education Department. The plans were transmitted to the Scotch Education Department on May 19, 1881, and returned, along with the specifications approved of, on June 11, 1881. Offers for the principal artificers' work were accepted on September 26, 1881, namely:—Mason and brickwork (Parker & Dick), 3,372*l.*; wright work (William Lightbody), 2,468*l.* 10s. 3d.; and other trades bring up the total to 8,391*l.* 8s. 0¾d. Messrs. James Salmon & Son have added to this amount for furniture, architects' fees, &c., the sum of 1,901*l.* 6s. The cost of buildings will be equal to 9*l.* 16s. 0½d. per scholar. The site for the school cost, including legal expenses, the sum of 3,888*l.* 14s. 3d. The total cost of the site and buildings is 14,181*l.* 8s. 3¾d., which is equal to 13*l.* 10s. 1¼d. per scholar.

Slaughter House Reform.—At the usual monthly meeting of the Sanitary and Economic Supply Association, held on the 17th inst., in the School of Science, Gloucester, the Bishop of Gloucester and Bristol in the chair, after a discussion on the above subject, introduced by Dr. Wright, F.R.S., Medical Officer of Health for Cheltenham, the following resolution, proposed by Dr. Bond and seconded by Mr. S. Bowly, was unanimously adopted: "That this meeting desires to express its warm approval of the principle of public slaughter-houses as conducive to the interests of economy, health, and humanity; and its earnest hope that the local authorities of this neighbourhood will, with as little delay as possible, take such steps as may be in their power to provide for this most pressing want."

Chandler's Patent Supply Cistern.—Our advertisement columns give a representation of a supply cistern for kitchen-range boilers, which is of a neat design, besides possessing several improvements over the old-fashioned square cistern. For example, the old-fashioned cistern possesses no facilities for fixing, but requires either a brick pier to be set on, or a niche in the brickwork, whereas this cistern has four lugs by which it can be fixed with screws or nails, and being of a neat appearance it can be placed in sight. It is fitted with ball-valve, connecting-screw, and union complete, and deserves to be looked at.

Sunday Schools, King's-Lynn.—On Tuesday last, a bazaar was opened at the Athenæum King's Lynn, Norfolk, in aid of funds for building the Wesleyan Sunday Schools. The buildings are approaching completion and the accommodation will consist of lecture-hall, 60 ft. by 40 ft. and 26 ft. high, with panelled boarded wagon-roof. The room will be lighted by three large windows with traceried heads; the artificial light will be supplied by a sunburner, and by brackets at the sides. Five class-rooms are provided, opening directly into lecture-hall and are divided from it by sliding doors; each class-room is well lighted by a large three-light window, glazed with lead lights, and will have a plastered ceiling and cemented dado. The library adjoins the class-rooms and is similar in all respects. The buildings will be heated by Messrs. Bacon & Co. on their small-pipe principle. The buildings are designed in the Perpendicular style, and are constructed of stock bricks faced with Bracknell red bricks; the mullions to windows and all dressings are of Lascelles's concrete; the roofs are boarded and slated. The cupola, which rises to a height of nearly 60 ft., is covered with lead, and the sides with oak shingles. Mr. Brown, of Lynn, is carrying out the works, and Mr. Lock, of Norfolk-street, Lynn, is providing the stained glass. The buildings have been designed and are being carried out under the personal superintendence of Mr. Hatchard Smith, architect, of Moorgate Station-buildings, London, with Mr. Hilliam as clerk of the works.

Messrs. Crosby Lockwood & Co. have in active preparation and will publish, it is hoped, in the autumn, an extensive work on British mining by Mr. Robert Hunt, the well-known Keeper of Mining Records. The book will, we are informed, comprise a practical treatise on the metalliferous mines and minerals of the United Kingdom, dealing comprehensively with the theories of mineral deposits, the history of mines, their practical working, and the future prospects of British mining industry. The work will be fully illustrated.

The Late Earl of Beaconsfield.—In memory of the late Earl of Beaconsfield a simple memorial tablet of brass has been erected in the Church of St. Wystan, Bretby, Derbyshire, by the Countess of Chesterfield, as "a record of a much-prized friendship, and a lasting regret." The brass, which measures 2 ft. 4 in. by 2 ft., has been executed by Messrs. Thomas Pratt & Sons, Southampton-street, Strand.

Value of Land.—The *City Press* states that land in South London has increased enormously in value. At Norwood a plot which was valued at 500*l.* ten years ago is now worth 5,000*l.* And this is not exceptional.

New "Sportsman" Office.—The constructional ironwork in these premises, described in our last issue, was supplied by Messrs. Chas. Williams & Co., of the Ferry Iron Works, Cubitt Town.

TENDERS.

For the erection of infants' school, Bromley, Kent. Mr. Richard Creed, architect:—

Humphris, Sutton, Surrey	£1,518	0	0
Soanes, Bromley	1,398	0	0
Smith, Bromley-common	1,239	0	0
Arnaud & Son, Bromley	1,180	0	0
Crossley, Bromley	1,166	0	0
Balding, Bromley	1,150	0	0
Stewart, Wallington, Surrey	1,128	0	0
Payne, Bromley	1,120	0	0
Satchell, Bromley	1,112	1	8
Grubb, Bromley	1,105	0	0
Yates, Bromley-common (accepted)	1,071	2	0

For rebuilding the ancient tavern of the Old Five Bells, Bromley-by-Bow, for Messrs. J. Carter Wood & Co., The Artillery Brewery, Westminster. Mr. John Calder, architect. Quantities by Mr. Edward Crutchloe:—

Richards & Son	£3,385	0	0
Boyce	3,150	0	0
Calnan & Co.	3,073	0	0
Falkner	2,957	0	0
Curtis	2,900	0	0
Merritt & Ashby	2,900	0	0
Gregory	2,860	0	0
William King & Son	2,840	0	0
Crisp	2,783	0	0
Stiling	2,742	0	0

For the alterations to the Victoria Dock Tavern, Canning Town, for Messrs. J. Carter Wood & Co., The Artillery Brewery, Westminster. Mr. John Calder, architect. Quantities by Mr. Edward Crutchloe:—

Richards & Son	£555	0	0
William King & Son	415	0	0
Stiling	376	16	0

For extension to factory in course of erection for Mr. Fredk. Foster (Contract No. 2), Hoxton. Mr. Spencer W. Grant, architect, 63, Finsbury-pavement:—

Atherton & Latta (accepted) ………… £450 0 0

For the St. Leonard's-road Schools for the School Board for London. Mr. E. R. Robson, architect:—

Wood	£18,883	0	0
Boyce	17,700	0	0
Brass	17,513	0	0
Kirk & Randall	17,389	0	0
Grover	17,372	0	0
Jerrard	16,983	0	0
Shurmur	16,965	0	0
Perry & Co.	16,448	0	0
Harris & Wardrop	16,438	0	0
C. Cox	16,420	0	0
Atherton & Latta	16,200	0	0

For cabinet and counter fittings to the Nun's Head, Nunhead-green, for Mr. F. J. Johnson. Mr. W. H. Jervis, architect:—

	In pine.		In mahogany.	
Gill	£261	0	£291	0
Lewis	196	0	246	0
Russel	190	0	210	0
Pierce	159	0	199	0
Taylor (accepted)	186	0	196	0

For alterations and repairs to No. 38, Park-lane, exclusive of decorations. Messrs. William Wallace & Flockhart, architects, 27a, Old Bond-street. Mr. F. Thomson, architect:—

J. McLachlan & Sons	£1,400	0	0!
Thos. Fox & Co.	1,089	0	0
W. & E. Curtiss	875	0	0
M. Manley	785	0	0
P. S. Robertson	764	0	0!

For warehouse, Lower Clapton. Mr. Tillett, architect:—

W. Shurmur	£693	0	0
Goodall	675	0	0

For the erection of nine houses at Walthamstow. Mr. W. A. Longmore, architect:—

F. & F. J. Wood	£9,178	0	0
Bentley	8,647	0	0
W. Shurmur	8,169	0	0
Reed	7,986	0	0
Morter	7,667	0	0
Fuller	7,510	0	0
Palmer & Sons	7,450	0	0
Parrish & Hawker	7,200	0	0

For building house and factory in Radford-road and Ward-street, Hyson Green, Nottingham, for Mr. Wm. Walker. Mr. Charles Wright, architect. Quantities supplied:—

Wheatley & Maule	£2,150	0	0
Enoch Hind	2,056	0	0
Dudson Parish	2,018	0	0
Lynam & Kidds	1,965	0	0
Collinson	1,940	0	0
Joseph Caulton	1,930	0	0
Henry Vickers	1,887	0	0
George Smith	1,871	0	0
Baines & Turton	1,860	0	0
John Jelley & Co.	1,850	0	0
J. R. Morrison	1,845	0	0
William Taylor	1,730	0	0

For pulling down and rebuilding Nos. 54 and 56, King-street West, Hammersmith. Mr. George Saunders, architect. Quantities by Messrs. Franklin & Andrews:—

Scott	£6,197	0	0
Hunt	5,890	0	0
Jarrett	5,860	0	0
Adamson & Sons	5,789	0	0
Hall, Beddall, & Co.	5,784	0	0
Macey & Sons	5,775	0	0
Lucas & Son	5,773	0	0
Gibbs & Flew	5,755	0	0
Fish, Prestige, & Co.	5,690	0	0
Oldrey	5,500	0	0
Chamberlain Bros.	5,469	0	0
Nye	5,220	0	0

For alterations to London and South-Western Bank, Forest-gate Branch. Messrs. James & J. S. Edmeston, architects:—

Lucas & Son	£692	0	0
Atherton & Latta	675	0	0
Smith & Son	623	0	0
Bullterim	615	0	0
Cox	610	0	0
Hallock	545	0	0
Crisp	523	0	0

For general repairs, painting, &c., at Radnor Lodge, New Wandsworth, for Mr. James Neal. Mr. W. P. Miller, architect:—

E. Dormer (accepted).

For two warehouses in Barbican. Mr. Bunkell, architect:—

Geo. Crabb (accepted) ………… £5,000 0 0

For new buildings and alterations to shoe factory at Leicester, for the Co-operative Wholesale Society (Limited). Mr. J. Tait, architect:—

Section No. 1.—Excavator, Bricklayer, Slater, Plasterer, and Stone Mason.

Jewsbury (accepted) ………… £1,091 0 0

Section No. 2.—Carpenter, Joiner, and Ironmonger.

J. Cox (accepted) ………… £2,520 0 0

Section No. 3.—Plumber, Glazier, and Painter.

Norman & Underwood (accepted) …… £566 16 0

Section No. 4.—Ironfounder.

Illston & Arnold (accepted) ………… £533 14 6

For new Sunday School Memorial Hall at Leicester. Mr. J. Tait, architect:—

Section No. 1.—Excavator, Bricklayer, Slater, Plasterer, and Stone Mason.

J. Holmes (accepted) ………… £615 0 0

Section No. 2.—Carpenter, Joiner, and Ironmonger.

H. T. & W. Chambers (accepted) …… £475 0 0

Section No. 3.—Plumber, Glazier, Painter, and Ironfounder.

Norman & Underwood (accepted) …… £198 10 0

For gardener's cottage at Maplewell, for Sir W. H. Salt, bart. Mr. J. Tait, architect:—

Wesley (accepted) ………… £520 0 0

For rebuilding Nos. 107, 109, 111, and 113, Ossulston-street, Somers Town, for Mr. Colchester. Mr. Benjamin Tabberer, architect:—

Patman & Fotheringham	£4,785	0	0
Jarritt	4,550	0	0
R. Conder	4,550	0	0
Sabey & Son	4,498	0	0
Steel Bros.	4,460	0	0
Mark	4,430	0	0
Lawrence	4,389	0	0
Downs	4,342	0	0
Spencer & Co.	4,295	0	0
Jackson & Todd	4,075	0	0

For the erection of a small house and shop (exclusive of shop fittings), Markhouse-road, Walthamstow, Essex, for Mr. Marx Gross. Mr. W. F. Potter, architect:—

C. Dearing & Son, Islington	£520	0	0
F. & C. Hersee, Peckham	450	0	0
T. Probert, Walthamstow	440	0	0
R. Shaw, Leyton	390	0	0
G. Rayner, Walthamstow (accepted)	382	0	0

For additions and alterations, Wooburn House, Bucks. Mr. Arthur Vernon, architect, 26, Great George-street, Westminster, and High Wycombe, Bucks. Quantities by Mr. W. L. Vernon, Hastings:—

Holland & Hannen	£4,287	0	0
Woodbridge	3,994	0	0
Hunt	3,839	0	0
Silver & Son	3,794	0	0
Loosley	3,600	0	0

For putting in new shop-fronts and making other alterations to premises, Nos. 21, 22, 23, and 24, Fleet-street, Coventry, for Mr. F. W. Poole. Mr. Herbert W. Chattaway, architect, Trinity Churchyard, Coventry:—

G. Storer, Coventry	£675	0	0
C. Haywood, jun., Coventry	328	0	0
J. Brown, Coventry	312	0	0
F. Makepeace, Coventry	309	0	0
A. Waters, Coventry	307	0	0
T. Mayo, Coventry (accepted)	305	0	0

For pulling down old premises and building new shops in Market-square, Bromley, Kent, for Messrs. Collins. Mr. E. J. Thomas, architect. No quantities:—

			Allowed for Old Materials.	
Priestly	£3,450	0	nil.	
Payne	3,348	0	£100	0
Crossley	3,255	0	45	0
Redman	3,220	0	65	0
Arnaud & Son	3,155	0	nil.	
Jones	2,917	0	100	0
Balding (accepted)	2,818	0	130	0

For alterations and repairs to a warehouse, No. 11, Curtain-road, Finsbury, for Messrs. B. Cohen & Sons. Messrs. Hammack & Lambert, architects:—

T. Boyce	£1,470	0	0
J. H. Johnson	1,307	0	0

For the rebuilding of the Black Horse public-house, Bethnal-green, for Mr. Zabell. Messrs. Hammack & Lambert, architects:—

J. Walker	£1,049	0	0
R. Marr	995	0	0
Steel Bros.	899	0	0
W. R. Cubitt	848	0	0
J. H. Johnson	837	0	0
S. W. Hawkings	708	0	0

For additions, &c., at Hill House, Ipswich, for Mr. J. C. Ransom. Mr. Brightwen Binyon, architect. No quantities:—

Girling	£3,560	0	0
Grimwood & Sons	3,347	0	0
Bennett Bros. (accepted)	3,175	0	0

For additions to hotel, Beckenham, Kent. Mr. H. H. Collins, architect. Quantities supplied:—

Astell	£7,882	0	0½
Cooper	7,596	16	7
Graham	7,393	0	0
Grimwood & Sons	6,967	0	0
Burrows	6,830	0	0
Abraham	6,657	0	0
Bentley	6,489	0	0
Merritt & Ashby	6,333	0	0
Croaker	5,534	0	0

For new work-room, &c., at Limes Villa, New Cross, for Mr. F. Swinburn. Mr. T. Hunt, jun., architect:—

Rodwell	£142	0	0
Mark Redman	138	0	0
H. L. Holloway (accepted)	135	0	0

For the erection of market hall, public offices, and shops at Ebbw Vale, Mon., for the Ebbw Vale Market Company (Limited). Mr. E. A. Johnson, Abergavenny, architect:—

				Extra for white pressed bricks.		
E. Stephens, Abergavenny	£2,760	0	0	£107	3	4
J. G. Thomas, Abergavenny	2,700	0	0	113	0	0
T. Foster	2,521	0	0	96	10	0
Morgan & Evans, Pontnewydd	2,500	0	0	—		
Bowers & Co., Hereford	2,500	0	0	112	10	6
David Davies, Cardiff	2,490	0	0	96	9	0
John Williams, Merthyr	2,480	0	0	—		
Jones & Son, Newport	2,449	0	0	100	0	0
J. Isaac, Swansea (accepted)	2,300	0	0	128	12	0

For the erection of a mission room adjoining the Church of St. Barnabas, St. Peter Port, Guernsey. Messrs. Noltey & Trollope, architects:—

Gervase Peek (accepted) ………… £1,130 10 0

For alterations to St. Sebastian's Vicarage, Wokingham, Berks, for the Rev. A. Carr. Messrs. Morris & Stallwood, architects, Reading:—

R. Conder	£1,610	0	0
Silver, Sons, and Filewood	1,447	0	0
A. Sheppard	1,318	0	0
Joseph Norris	1,222	0	0
Botterill	1,194	0	0
Spear & King	1,041	0	0

For repewing and restoration of St. Lawrence Church Towcester, Northamptonshire. Mr. J. L. Pearson, architect:—

Thos. Heath, of London and Towcester (accepted).

For alterations and repairs to residence in Harrington Gardens, South Kensington. Mr. W. H. Collbran, architect, 94, Gloucester-road:—

McLachlan & Sons	£1,558	0	0
Martin, Wells, & Co.	1,300	0	0
H. Smith	1,029	0	0
Cowland & Co.	979	0	0
J. W. Falkner	973	0	0
Toten & Sons	970	0	0
W. H. Smith	920	0	0
Styles & Holdstock	862	0	0

For residence at Westcombe Park, Blackheath, for Mrs. E. A. Malings. Mr. W. H. Collbran, architect. Quantities by Mr. W. H. Strudwick:—

Higgs & Hill	£2,344	0	0
Martin, Wells, & Co.	2,185	0	0
Cowland & Co.	2,158	0	0
Perry & Co.	2,089	0	0
Eyers & Sampson	2,087	0	0
Jerrard	2,073	0	0
Huey	2,063	0	0
Tongue	1,980	0	0
Nightingale	1,977	0	0

For alterations to Nos. 93 and 95, Fulham-road, for Messrs. Bowman & Co. Mr. W. H. Collbran, architect:—

Picken	£929	0	0
H. Smith	753	13	0
Styles & Holdstock	619	0	0
Wilkins	613	0	0
W. H. Smith	532	0	0

For alterations and repairs to residence in Harrington-gardens, South Kensington. Mr. W. H. Collbran, architect:—

Higgs & Hill	£1,390	0	0
Toten & Sons	1,383	0	0
H. Smith	1,227	0	0
Cowland & Co.	1,227	0	0
W. H. Smith	1,221	0	0
J. W. Falkner	1,210	0	0

For alterations and repairs to No. 82, 84, and 90, Fulham-road. Mr. W. H. Collbran, architect:—

Oliver	£425	0	0
Toten & Sons	405	0	0
W. H. Smith	397	0	0
H. Smith	389	0	0

For the erection of stables, Gloucester-grove, South Kensington, for Mr. R. King. Mr. W. H. Collbran, architect:—

Toten & Sons	£398	0	0
R. Smith	397	0	0
Andrews	375	0	0
W. H. Smith	374	0	0
E. Smith	365	0	0

For works required in the formation of road, drains, &c., about 170 yards long, in laying out the White Swan Estate, Birstal, for building purposes, for the Birstal Local Board:—

J. Bentley, Speedwell-street, Woodhouse Carr, Leeds	£1,796	5	0
Wm. Barrowclough, Birstall, near Leeds	1,761	4	0
John Slinger, Cleckheaton	1,750	0	0
J. & T. Oldroyd, Batley	1,530	2	11
G. & R. Naylor, Scholes, Cleckheaton	1,487	0	0
Wm. Harrison, 154, Bradford-road, Huddersfield	1,317	2	6
Brier, Sons, & Wilson, Savile Town, near Dewsbury	1,300	0	0
Egan & Pearson, Manningham-lane, Bradford	1,214	10	0
Alfred Law, Birstal, near Leeds	1,164	7	8
Matthew Hall, Dudley-hill, near Bradford	1,055	8	2
James Rhodes, Birstall, near Leeds	1,027	9	5
Parker & Sharp, Birstall, near Leeds (accepted)	1,100	0	0

For shop and premises, Bromley, Kent. Mr. Fred. Stocker, architect:—

Bulled	£998	10	0
Wood	987	0	0
Kennard	977	0	0
Jones	920	0	0
Hunt & Challis	910	0	0
Loader	895	0	0
J. Baxter	880	0	0
Marr	857	0	0
Burnett	795	0	0
Cox	794	10	0
Holloway	770	0	0
Stayner (accepted)	737	0	0

For completing eight houses, Tournay-road, Walham-green, for the Middlesex Land Company, Limited. Mr. George Edwards, architect:—

Long	£1,930	0	0
Scharien & Williams	1,911	0	0
Green	1,810	0	0
Hunt & Freeman (accepted)	1,660	0	0

For alterations to No. 78, Westbourne-grove, for the Albion Bakery Company, Limited. Mr. George Edwards, architect:—

Sage	£630	0	0
Reading	594	0	0
Drew & Cadman	575	0	0
Smith	570	0	0
Stimpson & Co.	545	0	0
Jay	533	0	0
Scharien & Williams (accepted)	510	0	0

For alterations to No. 19, Soho-square, for Messrs. Burroughes & Watts. Mr. Rowland Plumbe, architect:—

Hayward & Sons	£2,870	0	0
Goodman	2,787	0	0
R. Conder	2,760	0	0
Bangs	2,600	0	0
Lawrence	2,548	0	0
Ashby Bros.	2,486	0	0
Patman & Fotheringham	2,473	0	0
Adams & Son	2,433	0	0
Longmire & Burge	2,335	0	0

For the erection of provision shop, warehouses, and dwelling-house at Sleaford, for Mr. Brewitt. Mr. J. R. Benstead, architect:—

Newton, Helpringham	£1,350	0	0
Atcliffe, Horncastle	1,100	0	0
Banks & Co., Sleaford	1,080	0	0
Wallis & Son, Spalding (accepted)	1,040	0	0

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The Teaching at Schools of Art.

SOME of our readers will have observed the letter by Mr. Crace which was printed in our last, one among several which have been addressed to the secretary of the Royal Commission on Technical Education. The subject is one of too much importance to be passed over in our columns without some more special comment, both in regard to the deficiences which are complained of by Mr. Crace and others who are practically interested in decoration, and the possible means by which those deficiencies may be remedied.

The admission that has been made in the letter referred to, that there has been a great advance in public taste of late years, and also in the design of the objects produced, seems at first sight at variance with the complaint that there is no adequate supply of competent decorative workmen to be had from the schools. If it is admitted that there are better things produced than before, who designs or draws them? might seem the natural answer. Probably one reply to this would be that a great deal of decorative work produced at present is mainly imitative of a few types, and these types have been brought into notice and adoption chiefly by the influence of those "few earnest and enterprising artists" who are referred to in Mr. Crace's letter. It is certain that at present there is a great deal of fairly good decorative work produced, any specimens of which would strike us as good when seen separately, but which when seen together appear too obviously the production of a habit of repetition rather than of any original power in regard to either design or execution. And probably this would be the case even if there existed among decorative workmen more innate and original power. The public are mainly to blame for this. Art and artistic things have become a fashion like dress, and a fashion to be just as rigorously followed; and when it is established that this or that style of design is the best thing, every one asks for it, and would feel out of the running without it, and the philosophy of good or bad taste is settled as summarily as we once heard a tailor settle the question of taste in dress: "What's in fashion is good, sir; and what's not in fashion is not good."

This we imagine (with the fact that assistants are obtained elsewhere than from the schools, including foreign countries) to be the explanation of the apparent anomaly, that in spite of an acknowledged improvement in public taste and in production, there is so little power of originating or of working on principle to be found among the decorative workmen of the day. Without very much innate power of design, men can with a moderate amount of ability learn to assimilate and reproduce the forms of decorative work most in vogue; and consequently we see shop after shop filled with the same kind of work, and house after house decorated and furnished in the same style, as if there were no such thing as individuality of taste at all. This is only, however, an offshoot of the real question at issue, which is, why the now rather large and extended means of art-education in England do not avail to produce a higher class of artistic workmen than it appears they do produce. There is a great ramification of art schools all over the country, and a very elaborate system of rewards for various kinds of proficiency, but yet the master decorators affirm that no results are perceptible from all this in the work of the men who come to them from the schools.

It is suggested that the cause lies in the want of special attention directed to the study and practice of ornamental design in the Departmental art schools of the country, both in London and the provinces, and this, we imagine, has a great deal to do with the matter, though we should not be surprised to find that some of the most active of the official coadjutors in the Government system of art-education are of quite a different mind, and would consider themselves much injured by any accusation of attaching too little importance to the study of decorative design. There is no question that the South Kensington Museum has had a great influence upon those who have been brought within its range as a place for study and observation of examples, in promoting a knowledge of and feeling for decorative art; the vast majority of the works purchased and under continual exhibition there, or lent from time to time to provincial exhibitions, are examples of decorative art; sculpture and painting occupying but a very small proportion of the works acquired. In some cases that we have known of, the study of some of these examples has had the effect which it ought to have, in stimulating the attempt to produce new forms of design based upon old ones, but not mere copies; only the other day we were looking at some lace designs from Nottingham, based upon forms of Indian ornament, and produced under that inspiration by an operative in a lace-mill. Unfortunately, it is to be feared that these are rather rare instances; but the fact that there are any such instances shows that there may be the material for producing the proper result of study from existing examples of past schools, if only it were fully and rightly directed.

Why is it not, then, rightly directed? Some of the authorities at South Kensington, we have reason to know, are strongly impressed with the necessity for special study of decorative design, as a branch of art quite different in its conditions from imitative art, even as represented in the highest class of sculpture and painting; requiring special study and special exercise of thought to apprehend its conditions and to work them out to adequate results. But it does not appear that this is sufficiently appreciated by those who have the principal voice in the direction of the studies enjoined, and in passing judgment on the work done. The mistake which is made appears to lie in carrying too far the conviction that the study of nature, and especially of the figure, is the highest end of art, and that this will alone give the power to apply the faculty of draughtsmanship, thus gained, to the production of design in the lesser arts. The production of high-class figure design, in painting or sculpture, is no doubt in one sense the most intellectual branch of graphic art. But the production of equally good decorative design, though it may be a less intellectual form of art than this, is a problem different in kind as well as in degree. It does not require the same degree of intellectual grasp and of training in draughtsmanship which the execution of pictures and sculpture requires; but it does demand a special branch of training, for its own especial ends, which those do not demand. Decorative design does not consist in imitation of natural forms, but in the adaptation of these as suggestions for design, not to be copied as they stand in nature, but to be created anew as decorative treatment. Now, the study of the figure alone, and even the possession of the power of imitative drawing and colouring of all objects, however complicated and delicate, as they are seen by the outward eye, will not give of itself the power of assimilating and modifying these forms for use as decoration, nor even the right understanding of what that use should be. That it will not do so is evident from the fact, of which we see frequent instances, that painters and sculptors of very high power constantly fall short when they attempt decorative design, and produce work in this latter class which is feeble in execution and false in taste. A prominent example may be named in the case of what is in the main one of the finest and most powerful works of modern English art, the Wellington Monument. The figure-sculpture in this is exceptionally fine and powerful, and the general design of the monument grandiose and effective; but a good deal of decorative detail, such as the twisted knots of rope round part of the pedestal, and the medley of implements of war huddled together in other parts, represent an entirely false and, artistically speaking, a vulgar taste. And we should surmise, from some of the expressed opinions of the eminent painter who is the responsible examining head of the Departmental art schools, that he himself attaches too little importance to the study of decorative design for its own sake.

If the reply is suggested that in the period of Renaissance art there were great paintings, and great decorative work done by the same men, our rejoinder would bring us just to the point we wish to come to. In the first place, we would say, as a matter of fact, that those who are generally considered the greatest of Renaissance artists, the great names of its latter period, were not the best of decorative designers. The architectural details produced by Michelangelo and Raffaelle, those of the former especially, are not their happiest efforts. The period of the finest decorative work was before their time. And the reason, in part at least, was that in the earlier days decorative art came first, and sculptors and painters ascended from that to the higher arts. They had mastered the decorative side of design in the first instance. When the human figure came to be the first object of interest with every artist, the decorative design was passed over more lightly as a secondary interest. As we trace out the treatment of decorative art in any class of work,—say in silversmiths' work,—from the earlier to the later days of the Renaissance, we find a constant increase in the use of the figure as a decorative adjunct, and a progressive development in the freedom and power of its treatment, accompanied by an almost equally marked retrogression in the taste and suitability of the minor details. Mere cleverness of execution increases; good taste and the sense of fitness (so important in decoration) become deficient. And we imagine this will be so whenever the attention is entirely concentrated on figure work, on imitative work whether of higher or lower class, to the exclusion of any systematic study of decorative design for its own sake.

It is in relation to this view that one of Mr. Crace's suggestions as to the causes of the deficiency he and those whom he represents are complaining of has especial point. He has observed that too much stress is laid, in the Departmental schools, on the study of still life; and the evidence of the annual exhibitions of students' work at South Kensington goes to confirm this. A great many prizes are offered for this class of work, and a great deal of time is obviously spent often over single drawings, in finishing them up to the point which will secure a prize. It is a good deal to the not always healthful influence of Mr. Ruskin's writing and teaching that we suspect this is to be traced. He has largely dwelt upon the importance of finished and precise manipulation in painting. Now, it may be freely admitted that no class of study tends so much to progress in manipulation, in regard to painting more especially, than the study of still life. The objects to be studied are stationary and little subject to change of form or tones, and the art of reproducing them in pigments can be carried out with more patient minuteness than in any other branch of imitative art; but it seems undeniable that while no study exercises manipulation more, none exercises thought and intellect so little, and the exercise is almost contrary to that required for decorative design. Its object is entirely realistic; the object of true design is never realistic, usually far from it; so that here the training on which so much stress is laid is directly adverse to what should be one of the main objects of artistic teaching for the many.

It is a question whether, even apart from this, there is not in the Government schools of art too much time spent in the manipulation of special drawings rather than on what would tend to develop the power of drawing generally. We have observed on this before in speaking of the prize-drawings when exhibited, and we have it confirmed in various reports in regard to the system of work in the art schools. We know that weeks or months are often spent by a student in stippling at a drawing of a head or a figure from a cast, in order to get a medal or a mention for it; and the same time is even spent on drawing from casts of much more uninteresting subjects,—reliefs in plaster of fruit and flowers, &c. Such drawings are not artistically, in any sense, an end in themselves; no one really cares for such a shaded drawing from the round for its own sake; the only ultimate value it has is for the student who gets a medal for it, and hangs it up in his or her home as a trophy, and the allowance it may obtain for the school. The object of making studies of this kind is to acquire the power of drawing and the knowledge of the structure of the objects drawn, and this may be acquired and exhibited far better by half a dozen or a dozen drawings, not so prettily finished, but showing the result of the study of the same object in different lights and aspects, than by one minutely stippled example, which may be produced at the cost of much less real observation and draughtsmanship than is often shown in less finished work. More especially is this the case when we regard the study of drawing as a preparation for decorative design. To a decorative designer the knowledge of the figure is essential, but not the power of representing it in highly-finished relief; that seldom or never comes into decoration. What is wanted is the power of drawing it in all positions when required as an accessory to the design, and to this, multiplicity of study is much more requisite than mere finish of one or two specimens. This points out the direction in which figure-study should be modified, as it appears to us, to be subservient for an education towards the art of design rather than the art of painting pictures; and that, after all, is what the majority of those who study in Government Art Schools can do most good with. There is room for a much more numerous body of art-workers in the decorative arts than in the production of works of painting and sculpture. The latter are the top and flower of art, but the demand for them is limited; whereas decoration, of more or less elaborate type, is wanted almost everywhere.

Prizes are, of course, given for decorative design, in the Government schools, but the results are not of the highest class. In architecture the designs sent in, and for which prizes are awarded, are generally very poor, sometimes absurdly so; the subject is evidently not understood, and does not receive sufficient encouragement to bring out any but very mediocre work.

Looking at the means to be adopted for rendering the Government schools of art more productive of the sort of power which is in request, and for which there is apparently at present such an inadequate supply, it appears to us that no better suggestion can be made than one of those which is made in Mr. Crace's letter before referred to, viz., that the higher grade prizes should be open only to those students who show proficiency in the application of art to decorative purposes. We do not say that the production of original painting and sculpture of the highest class is not a higher object still, but it is not the real business of the Government schools to produce these. Those who want to become artists of this type must go through a different training from any which the departmental schools can well supply, except as a mere initiative. As it is, the highest and most coveted prizes are given for studies of the figure from the life and from casts, and for still-life paintings. Let the mere manipulation be less encouraged by lowering the scale of prizes for it, and let the highest prizes be given for work which shows thought, not in mere imitation, but in the adaptation of natural objects, including the figure, to original decorative design, and to such design even apart from the adaptation of natural objects. The Government schools would then be in reality, what they are certainly not now, schools of *design*, not merely of drawing; and under such a system there would be the best chance that, after reasonable time, results would be shown in the turning out of a more trained, thoughtful, and original class of decorative designs. As an initial step, it is certainly also of importance that those who preside over departmental schools, in the provinces especially (where there is no South Kensington Museum), should be more proficient in decorative art than they, we imagine, often are. We have certainly ourselves known local teachers who were very well up in drawing and painting in one sense, very well able to direct and criticise the labours of a life class, and so on, but who were destitute of any notion of what constituted good or bad design in ornament; nor in South Kensington itself is there at all the right attention given to discriminating between what is good and bad in taste,—witness the over-laudation, on which we before commented, which has been bestowed on the work represented in the Jones Collection. Decorative design means thought applied to the choice and treatment of forms in their application to various materials and objects, and it is this side of artistic study which specially requires stimulating and directing.

"THE HISTORY OF FREEMASONRY."

The design of the author of this work,[*] of which the first volume out of six is now published, is to embody in a single publication the "legendary" and the "authentic" histories of the Craft. The work by Herr Findel (of Leipsic), published in 1861, is considered to be the first history at all worthy of the name, of the Masonic Craft, which had been compiled; and in 1876 G. F. Fort published the "Early History and Antiquities of Masonry," discussing the legendary or traditional history of the fraternity. These two works Mr. Gould, and his friends associated with him in his laborious undertaking, have not considered wholly satisfactory, "dissenting very materially from these writers both as regards the facts they accept, and the inferences they have drawn." The actual "History" will be considered from the commencement of the Lodge records. In Scotland some minute-books of the lodges commence in 1599, while in England only the records of a single lodge (Alnwick) range between 1700 and 1717, the date of the formation of the first Grand Lodge.

That a correct "History" is required is evident from the following statement in a publication of authority:—"No man can give any account of the Order of Freemasony, of its origin, of its history, of its object, nor any explanation of its mysteries and symbols, which does not leave the mind in total uncertainty on all these points." Again, "There are so many various theories concerning the Origin of Masonry that each student may select his own favourite without prejudice to any other" (Mackenzie, "Royal Masonic Cyclopædia," p. viii.). The "sources," writes Mr. Gould, "to which the mysteries of Freemasonry have been ascribed by individual theorists," are very numerous. "Some of the more curious" are briefly described by him, and herein we are at once led to perceive the learning, and the great candour of the writer in his investigations; but as it is impossible now to follow him in all his details, the reader must perforce be referred to the work itself. He proceeds to summarise "what is actually known of certain systems or sects, in order that by a careful comparison with the authentic records of Mediæval Masons," it may be determined "how nearly or how remotely the usages and customs of the 'Ancient' and the 'Modern' Organisations correspond, and ascertain what grounds exist for attributing to the Masonic Institution any higher antiquity than is attested by its own documents; for however flattering to our pride may be the assumption of a long pedigree, it by no means follows that it will bear the test of a strict genealogical investigation." The consideration of these certain systems or sects, entitled, "The Ancient Mysteries, The Essenes, The Roman Collegia, and The Culdees," forms Chapter I., and is contained in over forty pages, but whether they do correspond or not must be left for a time, as our author makes a skip of some centuries, and lands us in England in the fifteenth century, or thereabouts. It is not usual in "histories" to work back, but it is in genealogical records. The son, from his father works back to his grandfather, and so on, picking up where he can connecting links from other pedigrees, until he reaches some pre-historic period in which so much is assumed. We could have wished that in this inquiry the history of Freemasonry had been first described from, as above stated, the formation of the Grand Lodge in 1717,—then its predecessors as far back as the few facts and traditions would help,—then the course during the Middle Ages of what is assumed to be Freemasonry, but would of course be Operative Masonry, and thence to these "Ancient Mysteries," if it be desirable to consider them as their predecessors. Is not the cart put before the horse in the volume under consideration? The heading of this First Chapter must here be sufficient for its own explanation; the forty pages comprise a very laborious investigation of the subjects, with ample quotations of authorities and references, ancient and modern, for the benefit of the captious. "According to Mackey" ("Encyclopædia," *s.v.* Talisman), "an instance of the transmutation of Gnostic talismans into Masonic symbols, by a gradual transmission through Alchemy, Rosicrucianism, and Mediæval architecture," is described. But what has Mediæval architecture to do with all these? Our author intends to treat his subjects fairly, but still occasionally he appears to us to be somewhat prejudiced. The moot point is ably discussed as to whether "English gilds are of English origin," or, as stated by Coote, "this trivial word (gild), due to the contributions upon which the (Roman) colleges had from all time subsisted, betrays their constitution; and we find them also where we ought to expect them,—in the Roman cities of Britain." It has been observed that "the colleges, the Collegium Fabrorum, which dwelt in the Civitates Regnorum, remained in this country throughout the imperial rule, and with the provincial inhabitants survived the Anglo-Saxon occupation of Britain,—that this is the true origin of the English guild it will not be very difficult to demonstrate" (Gould, "The Four Lodges," p. 38). "The truth is," writes Pike, "that the guild system existed before and after the Norman Conquest, but that there is no historical evidence of its beginning." The theory,—one of many,—connecting the Culdees with the Freemasons "advanced in 1844 by the Hon. Algernon Herbert, has been characterised by Dr. Reeves 'as a strange combination of originality and learning joined to wild theory and sweeping assertion.'"

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[*] The History of Freemasonry; its Antiquities, Symbols, Constitutions, Customs, &c. Embracing an Investigation of the Records of the Organisations of the Fraternity in England, Scotland, Ireland, British Colonies, France, Germany, and the United States. Derived from Official Sources. By Robert Freke Gould, Barrister-at-Law, Past Senior Grand Deacon of England. Vol. I., 4to., 252 pp. London: Thos. C. Jack, 45, Ludgate-hill.

We must pass on to Chapter II., comprising "The Old Charges of British Freemasons," first expressing our regret at the insertion of them in this first volume as being out of sequence in the "History," and also remarking that it is not shown that these "Old Charges" belonged to Freemasons other than of the operative class. This very interesting chapter may probably have been mainly contributed by Mr. W. J. Hughan, whose publication on the same subject appeared in 1872, but not then brought forward as a speciality for the first time, as in my two lectures read before the Royal Institute of British Architects as long since as 1860 and 1861, the one "On the Superintendents of English Buildings in the Middle Ages," and its continuation, "Collections for an Historical Account of Masons, their Customs, &c.," I had shown what was the connexion of these "Old Charges," in relation to the inquiry.* "The so-called Constitutions are peculiar to England and Scotland, and contain legends or traditional history, which are not to be found in the regulations or working statutes of the latter country, nor do they appear in the Ordinances of the Craft in either France or Germany. . . By no other craft in Great Britain," adds Mr. Gould, "has documentary evidence been furnished of its having claimed at any time a legendary or traditional history." This very important statement may occasion some controversy hereafter, but the extensive range of his reading has, no doubt, given Mr. Gould ample grounds for the conclusion at which he has arrived. The ten MS. copies of a Charge, quoted by me in 1860 have since been increased by diligent researches to more than double (*i.e.* thirty-one) that number. "No two of the manuscripts are exactly alike (except one duplicate) though there is a substantial agreement between them all, and evidently they had a common origin, just as they were designed to serve a common purpose." Each of the old Masonic or operative lodges probably had a copy amongst its effects; this was perhaps read to an apprentice on his introduction, so that possibly many others may yet be discovered. We must here take exception to the title these authors, Messrs. Hughan and Gould, have given to these charges, as belonging to Freemasons, leading their readers to suppose that they tend to prove that modern Freemasonry is the same thing as the old Operative masonry, to lodges of which craft these "charges" undoubtedly belonged, and are therefore more applicable to a yet unwritten "History of Architecture," or a "History of Building Trades," than to a history of a subject whose connexion with them has not yet been proved. We regret to have to point out that in describing the No. 29 Charge or "Papworth Manuscript," the author has omitted to state (though quoting "the motto") that at the commencement of the MS. is drawn the *coat of arms of the Masons' Company!* By a careful perusal of the interesting observations made upon each of the thirty-one Charges recovered, we find it stated that this coat of arms appears on only two of them, one being Charge No. 23, dating 1686, which has the royal arms with those of the City of London and of the Masons' Company, and the second being Charge No. 24, having the same two coats of arms. A few only of these Charges have been identified as belonging to a Lodge or Lodges in London, another perhaps to Chester, six to York, and one perhaps to Warrington, and so of some interest in connexion with Ashmole's installation as a "Freemason." Only two of these thirty-one Charges are ascribed to "late sixteenth century," the remainder (all but two) to the seventeenth. These two are of very high interest and are exceptional, and are two of those described by me in the lectures before referred to. One is considered to be of about the middle of the fourteenth century, and the other early in that of the fifteenth. These two originals speak of "Masonry" not "Freemasonry." No. 4 Charge, dating 1583, is the first in which the latter word is said to occur, and again occurs in another dated 1650. The No. 23 copy already referred to is signed as "written by Robert Padgett, Clearke to the Worshipful Society of the Free Masons of the City of London," to which is a footnote taken from Kenning's "Masonic Cyclopædia," p. 457, that "Robert Padgett, we are assured on competent authority, did not belong to, nor is his name to be found in the books of, the Masons' Company." Several cases of this sort of unfortunate difference or contradiction could be named (as in No. 28). No. 25, dated 1693, has a word which it seems has raised a controversy, whether the passage *hee or shee that is to bee made a Mason* is not really *hee or they*; the grammar of the passage is so bad that either would do; but it also raises the other and important question of women being admitted Masons! In this particular Charge occurs "An entered apprentice's obligation to protect the interests of his master or dame," *i.e.*, mistress, clearly indicating that at that time, or in that Lodge, it was customary for females, in the capacity of employers, to execute mason-work. Hence it would seem to indicate that *this Lodge* was an operative as distinct from a Lodge of Freemasons, if any such existed at that date. Females could be, and are still, made Free of Guilds; they cannot be, I presume, of the Freemasons' fraternity. Besides these thirty-one manuscripts, there are found about twenty other late transcripts of the old Charges or printed copies, extracts, or references. The No. 8 Charge is in itself of great interest, being dated 1607, and possessing a drawn frontispiece of masons at work, with the words "Inigo Jones delin." at the bottom. A very remarkable assertion, printed in italics by the author, assures his readers that "All the Scottish versions of these Charges are evidently of English origin"; and in the second work by our author ("Four Lodges," p. 20) it is stated, "The practice existed in Scotland of individual brethren to make Masons out of Lodge."

After a style, or special proportion of design in building, had continued in fashion a few years, the builders (or masons) of the Middle Ages "gradually invented and adopted another, which was generally more ornamental than the former. It is, however, a very interesting and remarkable fact that nearly all the ecclesiastical edifices of this country, which are of contemporaneous ages, are of a corresponding or a very similar style. From Durham in the North, to Cornwall in the West, and in the intermediate counties, a coincidence of system will be found to be very generally if not always manifested. It is not easy to account for this uniformity in the architecture of churches at places remote from each other, by any other clue than by considering that each new style originated at, or emanated from some convocation or assembly of the monastic builders or Freemasons of each respective era." So wrote John Britton, in 1829 ("Gloucester Cathedral," p. 49). We most heartily trust that Mr. Gould's future researches will enable him to show in what manner the Master Mason and the Master Carpenter were taught, and in what town or towns the Head Guild or Guilds existed. The statute of 1360-61 (34 Edward III., cap. ix.) uses the words, "all alliances and covines of Masons, and Carpenters, and Congregations, Chapters, Ordinances, and Oaths betwixt them made, or to be made, shall be from henceforth void and wholly annulled"; and the famous statute of 1425 (3 Henry VI., c. i.), which declares that, "the yearly Congregations and Confederacies made by the Masons in their general Chapiters assembled," together with the "Constitutions" themselves, appear to prove that there must have been an annual assemblage of the Masons, either under a governing head or Grand Lodge, or under some chief of a district or locality. As we are still in complete ignorance as to the exact manner in which the transitions of style in Mediæval architecture were effected, architects as a profession must be grateful to Mr. Gould for the elaborate inquiry and the careful comparison he has made herein of these Charges preparatory, we trust, to the other discovery; not that they yet materially help the question, but a few references are useful.

"The ceaseless progress of the building art," writes Mr. Gould, commencing Chapter III., "The Steinmetzen of Germany," "throughout the strife and turmoil of the Middle Ages, is a remarkable phenomenon which at once arrests our attention and challenges our research. Prince and bishop, kaiser and free city, wage their eternal feuds; nations rise, fall, amalgamate, or dissolve. All Europe is in a ferment, and yet throughout the greater part of it the mason quietly and unceasingly plies his trade. . . . By degrees the face of the land became dotted with those monuments of architectural skill, the very ruins of which testify to the cunning of the builders. And who were these builders?" The early monasteries, and even the castles, may have afforded the means of acquiring skill in the manipulation of building materials, and furnishing large numbers of artificers and experienced master-masons. We know that each cathedral possessed its own complete set of workmen, as masons, carvers, carpenters, plumbers, glaziers, and labourers, while the monarch had a similar set, forming part of his household (and he did not disdain occasionally to press workmen), headed by the supervisor, and later, by the surveyor, and the architect. This latter set continued down to about 1836, when this branch of the household was reformed into the office of Woods, Forests, and Land Revenue. In the towns arose the craft guilds, for mutual assistance. The above Constitutions or Charges afford ample evidence of the three degrees of Master Mason, Fellow-craft, and Apprentice, and of a general assembly to be held annually at one place or another, for the "correction of faults, errors, and trespasses." It is very remarkable, however, that no *evidence* has been yet obtained of any such meetings, not even at the traditional York. The mayor of the city or alderman of the town in which the assembly was held was to be "felaw and sociat" to the master of the assembly, "in helpe of h'y ayenst rebelles and upberying ye rygt of the reme." This would appear to do away with all *secrecy* in lodges; while "in no trade of the Middle Ages, not even among the *Steinmetzen* of Germany, is it possible to find the slightest trace of a sign, or of anything approaching thereto," are two remarkable conclusions at which our author has arrived in the work before us. In commenting on the copy of Charge No. 12, Harleian, 2,054 (1650, or later), he writes, "We have here the earliest known mention of words and signs." Was Randle Holme, jun. (the former owner of the manuscript), a Freemason of the modern order? Again, it is said, "Did he (the apprentice) receive no token by which he could prove himself a brother? In the very nature of things we might expect that he did,—a sign, a word, a grip,—but not the faintest traces of these exist. The statutes do not even enjoin secrecy, but merely that "he shall keep every point and article."

A few observations on the Foreign branch of this subject must suffice. The insertion of the Chapters III. and IV. is explained in the passage:—"It is somewhat remarkable that French Masonic writers have not been tempted to seek the origin of the institution in their own past history, and in the traditions and usages of their own land. German authors, from Fallou onwards, have seized upon every trifling circumstance, every chance coincidence, tending to show a German origin of Freemasonry, and when a link was wanting in the chain of evidence, have not scrupled either to forge one, even to the extent of inventing ceremonies, or to placidly accept, without inquiry, the audacious inventions of their predecessors" On

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* These two papers were printed in our volumes at the time.

p. 202 is given "The Statutes, &c., of Montpellier," dated 1586, in which occurs "*maistres massons*"; and "the craft of *maçon architecte* was of the sworn (incorporated) trades of the city as it is of the other cities of the kingdom."

The code, or constitutions, or ordinances, of the *Steinmetzen* of Germany date only from 1459, Ratisbon; 1563, Strassburg; 1462, Torgau; meetings were held at Speyer, Strassburg, and Ratisbon; though Strassburg, Cologne, and Vienna, and later Bern, are also mentioned as the chief lodges. "The Brother Book of 1563" is given in a translation, with also "The Torgau Ordinances of 1462." The *fraternity* was quite a new departure;—the fraternity was agreed upon as something new; the *usages*, being ancient, were *confirmed*. The same division occurs, in these, as in the English Charges, of master, fellow, and apprentice. "We may therefore conclude," writes Mr. Gould, "that the chief lodge, the fraternity, and the ordinances, were all the direct result of the decline of the Craft, which decline may be attributable to the fact that the chief cathedrals were already finished, and that those in course of construction were being slowly prosecuted, and in some cases temporarily abandoned .... work was becoming scarce, ordinary masons were acquiring the technical skill of the *Steinmetzen*.... The masons were thrown upon civil employment.... their work became subordinate and supplementary to that of the ordinary builder .... the number of small masters would increase .... the highest class of workmen .... would develope into artist sculptors; thus the fraternity, being more and more subdivided and bereft of its most skilful members, gradually assumed a form closely resembling that of the other craft guilds,—the invention of printing, and the resulting increase of knowledge, enabling an architect to study elsewhere than in the lodge, all the materials are present for a practical dissolution of the fraternity, as we have learned to know it."

Here we will leave the consideration of this chapter III., and pass on to Chapter IV., "The Craft Guilds of France." We can but praise the carefully-selected historical account now presented. Several of the codes of the fraternity of the mason's trade,—as of Amiens, 1407, and Paris, 1260,—are given, the latter including many of the building trades. In two paragraphs near the end it is stated that the plasterers and masons are liable to the watch duty, but the mortarers and stonemasons are not liable. The reason assigned by the *prud-hommes* to Boileau was that it had been traditional from father to son that they had been exempt ever since the time of Charles Martel (715-740). We thus see that as early as the thirteenth century a tradition was current in France that Charles Martel had conferred special favours upon the stonemasons, and that this tradition was sufficiently well established to ensure very valuable privileges to the craftsmen claiming under it. With but one exception, all the old Charges of British Freemasons (or Guild or Lodge Masons?) "pointedly allude to the same distinguished soldier as a great patron and protector of Masonry." Was this, then, an importation from France? Mr. Gould then offers some observations on this remarkable allusion, and in a paragraph in his following and last chapter, suggests that "Maître Jacques" of another French legend may be the "Naymus Grecus" mentioned in the English Constitutions to which attention has been already drawn, "as having been at the building of Solomon's Temple, whence he came into France, and taught the science of masonry to Charles Martel"; or "Naymus Grecus may be the 'M. Soubise,' his companion in Jerusalem, and which name may be a corruption of Sabazius, one of the many epithets applied to Bacchus. .... The Anglo-Saxon workman on first hearing the name might naturally ask for an explanation, and receive for reply that it was a Greek name. From 'Greek name' to 'Naymus Grecus' or 'Naymus the Grecian' is no great step." Not having studied the Anglo-Saxon language, I am not able to form an opinion on this play of words. Another celebrated personage in these French legends is "Hiram." "I have endeavoured to show," writes Mr. Gould, "its probable existence amongst the 'Companions' of France from a very remote period. Candour, however, demands the acknowledgment that in Freemasonry we meet with but sparing allusions to Hiram until the early part of the last (*i.e.*, eighteenth) century." But "Freemasonry,—according to the most zealous historians,—was only introduced into France in 1715," and the Hiram legend of the "Sons of Jacques" is asserted to be derived directly from Freemasonry. But also, 1726 is the more correct date of its introduction, and the legend far anterior, but still posterior to the "Sons of Solomon," — two bodies to be explained presently.

Chapter V., "The Companionage, or Les Compagnons du Tour de France," broadly stated, means the associations formed by the journeymen of France for mutual support and assistance during their travels. .... Bloody battles arose out of the enmity between the various corps. ... The survivors were condemned to the gallows! The "Sons of Solomon," the "Sons of Maître Jacques," and the "Sons of Maître Soubise"; these comprise nearly all the building trades. The Masons, not to be confounded with the Stonemasons, and some other trades, never belonged to the Companionage. The "Legend of Maître Jacques" is given, which in its way is, at least, as marvellous as that given in the English Charges. The ceremony of a "Companion" leaving his master after his apprenticeship is over, and on leaving the town in order to travel, and his return, are each pleasantly described. In 1726 the city of Lyon was contested between the rival stonemasons .... the "Sons of Jacques" lost the day, and retired from the town for one hundred years. ... They then deemed themselves entitled to return, when another battle was fought, resulting in their being again defeated, when they retired to the quarries at Tournus; the "Sons of Solomon," however, not being content, endeavoured to drive their competitors still further away. Another great battle was fought, but who were the victors is, unfortunately, not recorded by the French narrator Perdiguier. This in 1826! An amusing story of the contest in workmanship by the locksmiths of Marseilles is likewise told; and the great battle of 1730, when "the list of killed was very large, and it was with the utmost difficulty that the military were able to restore order." "No study of the *Campagnonnage* at all worthy of the name has yet been made; Perdiguier attempted nothing of the kind; he merely stated what was usual in his own time." We are, therefore, greatly indebted to Mr. Gould for the great learning he has exhibited in elucidating this new and interesting portion of the history,—whether it be called of the Building Trades or of Freemasonry. It is admirably worked out, and is very suggestive of his view that the "Sons of Solomon, Companions de Liberté, free companions, may be Freemasons .... the acknowledged principles of the two institutions .... rest upon a common foundation," and he gives forty-one coincidences as worthy of particular consideration in support of his views. These cannot here be considered in detail; should there be any reader sufficiently tempted, by what we have here quoted, to read the chapter, he will be further amused by the description of the history and working of "a set of ignorant present-day workmen, who were only known by means of public reports continually detailing their revolting battles, and of whose inner constitution absolutely nothing was known to the general public previously to 1841."

I would suggest to the author his reading the prefaces and texts in the two publications of the celebrated French architect, Philibert de l'Orme,—the one brought out in 1561, the other in 1567, which "pitch into" the French workmen of that period with very strong gusto. De l'Orme, "believing himself to be justified in assuming the title of architect, made no peace with the incapacity of workmen, the ineptitude of master masons and master carpenters, the tricks of clerks of the works, the dishonesty of surveyors, the fallacies of draughtsmen, or the presumption of carvers and sculptors, producing enmities" which caused him to be superseded by Primaticcio in the official post, which he had held for fifteen years, two days after the accession of Francis II., as noticed in the "Dictionary of Architecture," *s. v.* "Orme."

Have the building operatives of England been influenced in their practices by foreigners? I do not gather that this is touched upon in the chapters on the working men of France. The tradition of Charles Martel in the English Charges requires further consideration. I do not gather that our very diligent author has referred to the "importation" of a vast number of artists and workmen from Italy into Germany and France previously to and especially during the reign of François Premier, and even later; and he has yet to consider and prepare an equally careful chapter to those he has already given, on the peculiar practices of the masons of Spain, by a study of the works of Caen Bermudez, the chief authority for the valuable chapter on the working of the masons and of the architects in that country, given by the late Mr. George Edmund Street, R.A., in his work on "The Gothic Architecture of Spain." In Italy there was a celebrated set of builders as early as 643, as noticed in the Lombardic Code of Rothar, which refers to the "majestri Comacini" as the builders of that period. Mr. Gould has only a few words to say of the Lombard and Byzantine workmen:—"For those in the South of Germany means were at hand in Northern Italy to improve their art by communication with the artists there resident." Yes, and to imbibe their peculiarities. This school of builders of Como are stated to have emigrated for a period of a thousand years, which circumstance may have been the groundwork for the story (as promulgated by Sir Christopher Wren) of the "travelling bodies of masons, each being led by a *maestro*, and living in huts or cottages. I do not perceive that this story or class of workmen has been more than once, and then only incidentally referred to as a "theory," in the volume under our consideration. The interesting volumes of Vasari, on the "Lives of the Artists of Italy," do not appear to have been referred to, and they contain very much relating to the traditions and career of the "working men" of an early period, who probably influenced England, as it is known they did France, Germany, and Spain.

Again, no notice has been taken of the astonishing irruption of Dutch and German artists,—painters, architects, masons,—also of Italians, from Geneva, Florence, and other cities, not only in the time of Edward III. (1327—1377), but especially from the reign of Henry VI. (1422—1461), and later Henries, which may have greatly influenced the working of the British masons in practice and theory and tradition. Flemish art was greatly patronised in England. It is curious that even while discussing the Roman "Collegia," our author has not apparently referred to that ancient writer on architecture, whose work has come down to us, and was well known to many of the Mediæval builders, namely, Vitruvius, who, writing in the time of Cæsar Augustus, is likely to have known the secrets, if any, of Masonry. In the preface of the sixth chapter of his work, he declares that "the ancients entrusted their works to those architects only who were of good family and well brought up," and gives the reason.

Mr. Gould concludes this *first* volume by the observation, "Nothing can be more *indisputably evident* [the italics are ours] than the descent of English, and consequently of all, Freemasons from the Mediæval builders." This, I think, remains to be proved in the succeeding five volumes, which we sincerely hope Mr. Gould and his friends may soon publish. Among the previous extracts it is stated that Freemasonry was introduced from England into France in 1715 or 1726. "Why, when Freemasonry was introduced from England did no recognition take place of its previous existence in Germany? The reason is obvious. Stone-masonry, purely operative, *had* existed in Germany,—Freemasonry, that is *speculative* science, never!" Can we, on this conclusion to which Mr. Gould has arrived, infer that speculative Freemasonry, after all, is new, and was unknown to the British lodges before 1717? "Speculative masonry," writes Mr. Gould, in his equally interesting and laborious "History of the Four Lodges" (1879, p. 33, which work we here gladly notice in connexion with the more important one under review) "was, so to speak, only on its trial during the generation which succeeded the authors of the Revival. The institution of a society of free and accepted masons, on a cosmopolitan and unsectarian basis, was one thing; its consolidation, however, opposed as its practical working showed it to be, to the ancient customs and privileges of the operatives, was another and a very different affair." And he notices (p. 32) that "The summary erasures of lodges, . . . the expulsion from the Masonic Union of original No. 4, and the high-handed supercession of original No. 3, amply attest that, in its career of innovation, the Grand Lodge was in no degree restrained from the full exercise of its assumed powers, by any sentimental feeling of gratitude toward the lodges which had called it into being."

It is somewhat amusing to an outsider to read that, "During the pendency of the secession (for about ten years) the Lodge of Antiquity No. 1 (formerly the old Lodge of St. Paul, formerly held at the Goose and Gridiron in St. Paul's Churchyard) founded a separate Grand Lodge of its own. . . . . There being in consequence, at such time, four Grand Lodges of England in contemporaneous existence, viz.:—1. The Grand Lodge of England (Regular Grand Lodge), established 1717; 2. The Grand Lodge of All England, York Masons, 1725; 3. The Grand Lodge of England according to the Old Institutions ('Seceders'), 1753; and the Grand Lodge of England South of the Trent (Lodge of Antiquity, original No. 1), 1779" ("Four Lodges," p. 22). In addition to this novel circumstance, we are enlightened by the fact that, "The introduction into this country (partly by M. A. Ramsay in 1740) of the then newly-devised and so-styled 'High Degrees' was doubtless greatly aided by the foresight of their originators, who, whilst refraining from any direct rivalry with the Ancient Craft degree, at the same time cleverly associated their invention therewith, by limiting the privilege of membership to Freemasons. They thus instilled a belief that the alleged 'High Grades' were a recovered portion of the ancient mysteries of the fraternity. . . . . and instead of an innovation, but the raising of a more stately and perfect superstructure, on the foundations of the existing edifice of Masonry." Dr. Oliver speaks of forty degrees as then practised on the Continent, though he had a list of nearly 1,000. And, "The special object of the new ritual (Seceders) was the promotion of Royal Arch Masonry (introduced about 1736-44), and as many gentlemen preferred joining the Grand Lodge of 'Four Degrees' to associating with the society which worked but 'three,' the rival body was successful in its career of innovation. A clue being thus afforded to the reasons which prompted its formation, as well as to the causes of its extraordinary success." It appears that in 1766 the grand secretary of the Grand Lodge called the Royal Arch, "a society which we do not acknowledge, and which we regard as an invention designed for the purpose of introducing innovations amongst the brotherhood; and diverting them from the fundamental rules which our ancestors laid down for us." We must conclude these extracts by another:—"Masonry may, therefore, be termed the stock, and modern Freemasonry the scion; the pristine simplicity of our ancient English rite being now only reflected in the mirror of tradition" ("Four Lodges," p. 42).

This History thus passed under review will, no doubt, take its place as a standard book of reference and authority, superseding all others, a position which it deserves to have accorded to it, if only for the calmness with which it criticises the assertions, stated as facts, in so many of the writings of the brethren:—"It is impossible," writes Mr. Gould, "to restrain a feeling of impatience when writers whose works would be otherwise valuable destroy the confidence of a critical reader by such baseless assertions" (p. 147). Another reason for its taking a high position is the clear exposition, after long researches, into the various portions of the ancient systems or sects which it is assumed were the predecessors of Freemasonry. The last chapter, as we have already observed, is entirely new, and adds great interest to the inquiry, and to the volume, the careful perusal of which will repay all those who are interested in the subject of Freemasonry.

WYATT PAPWORTH.

A Popular Resort.—The shareholders of the Winter Garden Company at Weston-super-Mare are about to consider a proposal from a gentleman of experience in the far West to obtain the property and form therein a zoological collection. The gardens, at present, are in an incomplete state, as the directors do not care to expend more money than the amount subscribed in shares, but there can be little doubt that if the same was properly completed, and a large hall or pavilion erected on the site set apart for such building, the same would become a popular resort.

ANKLES AND WRISTS, FEET AND HANDS.

IT may be noticed of ankles and wrists, when these are compact and well formed, that the rest of the figure is usually of good shape also. In these parts the construction of bone on which the limbs are framed comes close to the surface and evinces by their character the quality of the rest of its structure, and on this subject a few remarks are offered.

It has been affirmed of the thoroughbred horse that he can stand under an equal weight with the stoutest of the breed usually employed by brewers, the superior compactness of the bones making up for their less width. In applying this remark to the human construction some reserve may be requisite, although all may notice the great variety which is observable in the look of blood and breed between not only races of men but individuals, even of the same classes. Regard to these peculiarities and differences in the human figure is especially in the province of the sculptor, inasmuch as it is by the element of form alone that he can present and express all that is his aim in his art.

"The biggest man in the smallest compass" is an expressive athletic phrase, and is well exemplified by many of the ancient works of sculpture, especially by the principal ones remaining of those which adorned the Parthenon. The ankles and wrists in these representations of the human form are very distinct and clearly displayed, but the ankles are not large. A wide wrist in a man is essential to strength as a support for the hand, especially in the act of wrenching round, but it need not be clumsy. In a woman, who is not supposed, for beauty, to require strength in the arms, it cannot be essential that the bones of the wrist should be wide, although it is assumed that it should be sufficiently large round to allow the hand to be drawn through a bracelet that fits it, but not too tightly. This, however, presupposes, not a diminutive hand, but that it is so pliable as to close round, like the petals of a flower or the roll of a leaf, in passing through a small circumference.

In respect to ankles, however, the two sexes are more in a class, for both desire to be agile, and there can be no grace without a reserve beyond the strength exerted, and women, as dancers, exercise as great feats of activity as men. In consequence in either case there can be no satisfactory appearance of erect attitude without well-formed and compact ankles on which the whole superstructure is supported and moves with swiftness and precision. The ankle accordingly is a part which requires much attention, and there is no portion of the frame perhaps, with the exception of the head and face and hands, in which a greater diversity is to be recognised. The inner ankle, which indicates the lower termination of the *tibia*, is somewhat higher and further forward than the outer ankle, which is the lower end of the *fibula*. These two bones form the bony support of the leg, from the knee to the foot, but the variety of configuration in which their terminations just above the latter are presented in nature and translated in art is very remarkable.

The two ankle-bones, as we have said, are not exactly opposite, but the degree in which this takes place has many phases. In some cases the outer ankle bone is much lower than the inner one, in some nearly opposite. In well-selected form, however, there is rarely a great difference. Then the degree to which each ankle-bone is marked is very variable. In some cases the one, sometimes the other, is most pronounced. In some forms the inner ankle seems nearly lost, and in others to be noticed as the more strongly marked of the two, and art follows nature in these variations. In Thorwaldsen's Venus the inner ankle is but slightly pronounced, while in the Venus de Medicis it is the more emphatic of the two. Canova, as usual, follows the antique example in this respect, and also in the considerable substance and width he gives to the ankles in his statues of Venus. The question presents itself, Is so much width requisite? The weight does not rest upon the outer parts of these prominences, but upon the more central underneath parts of their surfaces, where they are articulated on the bones of the foot. Of course, it could never be acceptable that the ankles should have any appearance of weakness, but on the other hand, a superabundance of bone there which is not requisite for strength only, takes away from the appearance of fleetness and agility. How small are the feet and fetlocks of a deer, and even its hocks are not wide across, and yet what wonderful speed and endurance this tribe possesses; and here we naturally recur to what has been remarked of the bones of the dray-horse and racer, namely, that compactness of bone makes up for its less width. It is, no doubt, somewhat hazardous ground to venture on to suggest that some of our acknowledged Classic types of beauty among the antique statues have ankles somewhat thicker than is requisite, especially as in this respect they have been followed by many modern sculptors, although not by all. In regard to the practice in Rome, this subject is open to the following remark,—that the Roman woman is usually of stout proportions, especially when of the peasant class, who furnish most of the models to artists in that city. It is only, however, to a slight degree that we venture to differ from so much precedent; but this moderate variation may be submitted to add much to the taper grace of a leg, without taking from its strength. To speak generally of the female limbs, both upper and lower, when they are beautiful they may be described in comprehensive terms as not very widely departing from the tapering cylindrical form, varied, however, all over with contours of great diversity, carefully to be studied from nature with discrimination of selection. Thus unnecessarily wide ankles or wrists take away from this taper form, and thereby impair its delicacy and grace without affording greater strength; for when these parts are wider than is requisite, it rather leads to the view that the bone is not of the most compact and high-bred quality.

It is evident that this mode of reasoning and treatment must not be carried too far as no result can be more unfortunate and more removed, not only from grand and noble, but even from truly graceful, form, than that the ankles and wrists should look insufficient. It should stop short at that degree of fineness that may give a look of delicacy to the wrists in female form and of activity in the ankles. In the latter it is essential also that they should be very clean cut and distinctly marked, so as to show that their actual size is not the result of fat or thickness of skin, but that of the bone itself covered but with a thin skin. With persons not in health, or inactive, or aged, it is common for these parts not only to become enlarged, but also puffed, so that the ankle-bones are scarcely seen; and the filling up of the depressions between them and the tendon of the heel, instead of giving them real strengeh, rather argues the same degree of integument or fatness upon the prominences also of the ankle-bones, which virtually diminishes the size of the bones themselves. Thus, if the ankles are to possess that graceful fineness which favours the taper form of the legs, these parts around have to be kept rather clear of fat, which is a characteristic of youth, in contradistinction to that of puffiness which is a quality of age or want of condition. The above treatment in these parts is quite consistent with the utmost roundness in the limbs. It must not, however, be carried to leanness, but taste and selection of form have to regulate the distinctness that should be adopted.

The heel also, especially in female form, may be kept narrow, but it should not be too short, or a want of leverage for the hind muscles of the leg to act upon is the result. The *os calcis*, or bone of the heel into which the principal muscles for extending the foot downwards are inserted, is not in itself a wide bone, and the chief width of the heel, as generally seen, consists in that of the padding beneath it on which it rests, and is raised from the ground; but the making this unduly wide adds nothing to the real strength of the foot, and only renders it heavy and clumsy. At the same time a too great length of heel is especially ugly, as not unfrequently seen in the negro race, and, moreover, by its too long leverage renders some actions of the foot slow.

Also, there is no real strength in an undue thickness of the fingers and toes, of which the bones themselves are small, and the tendons which move them do not add much to their size, the rest of their dimensions being made up with fat and integument and outside skin, which padding and protection are requisite up to a certain point, but beyond which are superfluous and conducive neither to strength nor grace.

Finger-nails also should be of sufficient length, and their sides more parallel than they are usually made, and not like little toe-nails, as they are shown in art in some well-known instances. Finger-nails and toe-nails are as distinct in their character as the hands and feet are to which they belong,—a consideration often not sufficiently regarded. In speaking of the length of the finger-nail, it is the part which is closely attached to the finger-end that is alluded to, and not to that portion which may have grown beyond its tip. In portraits by Vandyke, probably from the fashion of the time, the finger-nails often project far beyond the ends of the fingers, of which, with due deference, the real grace may be doubted. If permissible in a picture, this certainly is not in a statue. Indeed, in such case in Nature, the nail ceases to be a protection, and becomes an element of possible discomfort, as liable to fracture.

The argument has followed more closely the female form than the male, but it applies to both, with the consideration to be observed that in the male figure a still greater distinctness of the form of the ankle and wrist bones is characteristic and appropriate. With respect to the wrist also, as indicated above, width is essential to give that power of various kinds and movements which the male arm requires, and without which no size or strength of hand or fingers would avail much. Men strong in the arm are wide in the wrist, and, indeed, this peculiarity is a far surer indication of real strength than the size of the muscles of the arms, as of the *biceps* of the upper arm, on which so much stress is apt to be laid, and than which no sign is more fallacious.

Remarks such as the above can only be useful to the student when notice of them is accompanied by a careful consulting of nature and of the best examples of the antique; and there is no doubt, in preparing a model for a statue in marble to be pointed from, it is far better to keep these important bones of the ankle and wrist rather full in all respects than to reduce them to the last degree of fineness which is best done in the marble itself when the work approaches completion, as we know that in that material nothing can be added.

The palm of the hand and the instep of the foot have much in common, in its being essential that they should possess strength and freedom of action combined with compactness, and that they should grow gracefully and firmly out of the wrist and ankle. In the instep it is requisite not only for strength but beauty, and to prevent jar on setting the foot down, and to give elasticity to the carriage that it should be arched, this arch resting on the pad of the heel and of the balls of the front foot just before the toes begin, and on which arch, formed by a number of bones closely united, and yet with some play, the whole superincumbent weight of the body and limbs is taken. The palm of the hand also should be pliable, and capable of taking a rounded and closed form as well as being flat.

In respect to the fingers which, with the thumb, may be called a united family of five, there is much to interest the artist and the æsthete. Next to the features of the face the hand is the part of the human body which is capable of most expression, and is more than any the direct material agent of the mind. The tongue says most, and the hand and fingers do the most. The thumb may be characterised as the sturdy boy of the family, who, with his nearest ally, his sister, the forefinger, transact most of the business of the establishment. Next may be said to come the two younger sisters, the middle one being the tallest of the family, and the next deeply attached to her, insomuch that in all movements of the hand they have a manifest tendency to keep together. Next and last comes the smallest of the family, boy or girl, which is somewhat independent in its action, occasionally, indeed, standing quite aloof, and having, indeed, an independent *extensor* muscle all to itself. This idea, although fanciful, points to the comparative intelligence and variety of action which the wonderful human hand, with all its array of fingers, possesses. The hand of the ape is comparatively a fore-foot. The fingers have not the same individuality, and mostly act as a paw, thus grasping the branch of a tree, not by opposing the thumb to the other fingers, as with the human hand, but using all together. This varies, however, in degree in the different tribes, but the characteristic is seen strongly in the gorilla class, where the thumb is very short.

On the other side, in the human form much of the chief employment of the hand depends on the use of the thumb as antagonistic to the fingers, as in grasping a staff or a sword, or a pencil or a pen. In consequence of the thumb alone being thus opposed frequently to the whole of the rest of the fingers, it is not suitable or convenient that it should be in any degree too short or slender in a delicate hand, as that would detract much from its use. It seems, indeed, by no means, even for grace, requisite that it should be so, for beauty and utility are closely associated, and it is only desirable that it should be fine at the tip, which does not take away from its strength. The little finger, however, may be small, as it adds but little to the strength of the hand, and is chiefly useful as an accessory, as in the steadying of the hand in writing and drawing. It is, however, especially useful to the instrumental musician, so that in that case it should not be small. Indeed, it may become more developed by exercise. The middle finger, being the longest, adds much to the grace of the hand, and the fore and fourth fingers, which are on each side of it, may appropriately be made of a similar length to each other, although this varies much in nature, in which, sometimes the one, sometimes the other, is the longer of the two.

With the foot again some illustration may be gained by regarding that of the ape. This tribe have been called *quadrumani*, or four-handed, as the foot in them as well as the hand grasps, which is essential in their arboreal habits. The great variety of actions of the human hand is almost as peculiar to man as his intellect, and the foot is chiefly a support in an upright attitude, and the toes act together and do not grasp. The hind foot of the gorilla has the great toe similar to the human thumb, set on antagonistically to the other toes, and widely apart from them, and he is even said to prefer to use the hind rather than the fore foot in grasping. The mode of the ancients in seeking beauty seems to have been in some degree guided by divergence from the lower types, and yet in some of the most cherished antiques of the Greeks and Romans, we find a larger space between the great toe and the next to it than is seen in Nature now. How is this to be accounted for? We venture to suggest, as they were both sandalled nations, and as the strap or thong to keep the sole of the sandal up close to the foot passed between these toes and was fastened in a loop above, that thereby these were somewhat unduly pressed apart, which from usage, however, came to be viewed as a quality of nature. A greater division between these toes than between the others is assuredly pleasing, but if carried to an extreme this may be doubtful. It affords no additional strength, and gives an unnecessarily splay form to the foot, and the right foot especially of the Venus de Medicis may be cited as an instance of this, in which if the great toe were somewhat straighter and less separated from the next one, where the sandal strap would pass between them, it might be more graceful and compact without losing anything in strength.

In saying, however, that the foot is a support, and that the toes thus act all together in conjunction, it is not meant to convey that it is incapable of expression; indeed, it may be alleged on the other hand that this quality in the foot has been somewhat overlooked, and that in statues generally there is a sort of regulation way of disposing the toes without regard to expression, whereas we may test at once in ourselves, by baring the foot and placing it on the ground, and simulating to ourselves the effect of anxiety or hesitation, &c., that the foot is thereby contracted, and the toes pressed together into a compact form. This is not the only instance of their change of form and disposition under the emotions of the mind, but it may be sufficient to draw the attention of the student to the fact that although far inferior to the hand in that respect, the foot also may be an element of expression, which redeems it from its monotony, and may be considered especially worthy of notice by the sculptor, as the feet of statues are on their pedestals raised from the ground, and are often so much regarded. The great toe is always the stoutest and strongest, but in the best forms, in nature as well as in art, is not the longest, the end of the second toe being slightly in advance of that of the first, or great toe, thereby giving a more rounded and complete and graceful outline to the disposition of the toes, and of the front of the foot. It is also pleasing that the second toe should be markedly larger than the third, and the third, although in less degree, larger than the fourth. In respect to the little toe a comment may be made similar to that with regard to the little finger, namely, that as it is so much less practically useful than the others, it may be diminished in size without lessening the strength of the foot, but thereby much enhancing its beauty.

Hands and feet, indeed, should have respectively a consistent character, and when the little finger is small the little toe will appropriately be in harmony in regard to size. Nothing, indeed, can well be more useless as well as ugly than the little toe being large. It is ugly in itself, and even in a shoe enlarges the size of the feet without any gain in strength. A foot assuredly should be rather small than large, that is to say, it should be compact. It is quite possible for it to be too short as well as too long, for it should be in proportion with the figure. This will be given in reference to the upper members if it approach closely in length that of the lower arm from the wrist bone to the elbow, a very useful measurement in sculpture, most suitable both for beauty and for grace of movement. With the view of affording another useful measurement, namely, for keeping the hands and feet in an agreeable proportion, to each other we append one of which we have not seen previous mention, viz., that the length of the open hand from the point of the middle finger to where the palm joins the wrist, may well be made to coincide with that of the whole length of the top of the foot from the tip of the longest or second toe over the instep to where it joins the leg. The agreement of these two measurements will tend to keep the scale of the upper and lower extremities in accordance, but, of course, like other cognate proportions, is not absolute, but subject to some degree of modification in harmony with the character of the subject. In the case of a Hercules, for instance, the hand would appropriately be somewhat larger in proportion to the foot than in a delicate female figure. The expression that a man is "a man of his hands," as applied in an athletic sense, indicates not only skill in exercise or combat, but a powerful arm, wrist, and hand to back it, and in these cases, therefore, the hand and wrist are appropriately larger so as to give grasp and power. On the other side, the delicate hand of woman is even more efficient and deft at its suitable occupations when small and fine, but her foot must not be too diminutive or she will lack easy grace in those exercises which are suitably common to both sexes, such as walking and dancing.

It has been already commented on that the instep should be arched, so as not only to give beauty to its form and outline, but elasticity to the carriage. No foot is more inelegant, and at the same time more readily wearied, than a flat foot. The arch, especially of a beautiful female foot, is such that, if placed lightly on the floor, daylight is to be seen beneath its centre between the ball of the foot and the heel. A somewhat similar grace and roundness is to be remarked in a beautiful female hand and wrist. In the restored hands and wrists of the Venus de Medicis this has, perhaps, been carried to an extreme, and a degree of sweep of line adopted not borne out by Nature. The no doubt enthusiastic restorer of these, inspired by emulation of the graces of the rest of the figure, overstepped the authority of Nature in his treatment of the wrist and arm, in curving the lines too much to keep within the boundaries of truth. And if the original arms and hands could be found, they would doubtless rebuke this pardonable extravagance. As it is, however, notwithstanding those now present on the figure are known to be restorations, yet as possessing the authority of acceptance from having been so long conjoined to the original torso, head, and lower limbs in the statue as it stands in the Tribune at Florence, their influence is much seen in the works of students of the antique. Still, this delusion points to a true grace, inasmuch as the angle made by the bend of the wrist inwards, as in both the hands of the Venus de Medicis, should never be treated in such a method as to appear sharp and abrupt, but means are attainable for this without falsifying the bones. The study of grace combined with the truth of Nature is one of the most interesting fields of investigation and realisation by the artist; and in this, sculpture, although thereby its task is made more arduous, has peculiar advantages, inasmuch as any departure from real truth which in one view may escape detection, will cause manifest deformity in another, which will rebuke the innovation and cause a rectification to be made, and the art to resume its due and proper course. It is thus that statuary has come to be especially accepted as the registry of excellent form, to a degree which painting, whatever her other advantages may be in some respects over her sister art, can never attain to. Thus it is evident that those examples of measurement to which attention has been directed above are much more readily illustrated in sculpture than in painting, although they are both in their several methods the handmaids of truth.

In ankles and feet painting has not such distinct and defined precedents to exhibit, but in respect to wrists and hands the portraiture of the Renaissance and of modern art of the last few centuries and of the present day affords many beautiful instances, and as they are second only to the expression of the features of the face they attract readily great attention. The costume of this period does not show the feet bare as the hands are, or they also would be noticed to have their expression as well as their more highly placed relatives; although, of course, not to the same degree. Where, however, they are exposed, as is usually the case in poetic sculpture, their expression as well as their form may well repay consideration. The most delicate feet of the present day are to be found, it is said, in the Zenanas of the East, where the feet of the occupants are seldom used in walking, and are never compressed by tight shoes, dainty slippers being usually their only covering. It does not, however, follow that their quality of form would be suitable to the highest class of sculpture; for without the development of exercise it is possible that they may be pretty without being beautiful.

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.

The fifty-seventh exhibition of the Scottish Academy was opened to the public on Saturday, the 17th February, when the rooms were crowded to excess, curiosity having been excited by the rumour that the works exhibited were more than usually attractive. This is, no doubt, the case, and although, as usual, some of the most remarkable works hail from the south of the Tweed, it is satisfactory to observe that the exhibition affords evidence that the distinctive characteristics of the Scottish school continue to manifest themselves, and that there is an obvious effort at the attainment of a high ideal rather than the mere realisation of the commonplace.

Conspicuous alike by its size, position, and subject is Sir Frederick Leighton's well-known "Phryne at Eleusis." Remarkably beautiful for a rich and harmonious scheme of colour is L. Alma Tadema's portrait of his daughter, and if less remarkable in this respect, not less beautiful in its simplicity is J. E. Millais's "Caller Herrin'," albeit the dainty maiden sitting beside the basket of fish has none of the characteristics of a veritable vendor of fish. Opposite this work of Millais's hangs a graphic and impressive scene from "Eugene Aram," by J. Pettie, and near at hand is the "Farmer's Daughter," of W. Q. Orchardson, delightful in its freshness. T. Faed's "I cannot, Mother, I cannot," tells its own tale, but the same cannot be said of John Faed's "Poet's Dream." The poet may be Milton, or perhaps Bunyan, and the dream is but too palpable. Very charming is J. C. Hook's "Tanning Nets," and J. W. Oake's rendering of a bleak "March Morning," is admirable.

Of the resident artists the one who has come most prominently to the front is a sculptor, Mr. Clark Stanton. Mr. Stanton, besides being a sculptor, is no mean proficient with the brush, both in water and oil colour, and he is besides extensively employed in modelling works for the silversmiths. Possessed of this versatility, he has hitherto dissipated his energies, but seems at last to have determined to tackle a work of importance in his special line, and he may be congratulated as having achieved a marked success. The "Pandora" will, we think, bear favourable comparison with any work of the kind hitherto produced in Scotland. She is represented as seated on a low chair; the limbs, stretched out and crossed at the ankles, are enveloped in light drapery, the upper portion of the figure being nude. The contours are fully developed and finely modelled, but chaste and refined withal, and the position is graceful and unaffected. Upon her right thigh rests the unopened casket, the right hand lingering near it as if in hesitation; the left arm hangs listlessly over the arm of the chair, whilst the head is turned slightly to the left, the face being lighted up by a fitful smile. From whatever point of view the figure is looked at, the lines blend harmoniously. The pedestal is decorated with appropriate bas-reliefs. Mr. Clark Stanton is an Associate, and may have aimed at securing the vacant seat in the Academy, but this has been awarded to Mr. W. D. Mackay, whose charming pastorals, in which figures and landscape combine, never stale the appetite. This appointment does not appear to have met with the approbation of Mr. Rowand Anderson, architect, who, in consequence of it, has returned his diploma as an Associate to the Academy.

Mr. G. Reid represents on a large canvas the "Last Sleep of Savonarola" in an impressive manner. There can be little doubt as to the ability displayed by the artist in the treatment of the subject, but the picture seems a more fitting adjunct to the cell of an ascetic than the room or gallery of a modern lover of art, for the daily contemplation of it could hardly fail in producing a depressing effect.

Very dramatic is R. Herdman's "St. Columba Rescuing a Captive," a woman who has been bound to a rock, and apparently intended to be offered up as a sacrifice by a group of Ancient Caledonians, who are certainly depicted as savage enough. The artist has succeeded in imparting to the saint an air of fearless dignity, which impresses the savage nature with wonder and awe; the attendant monks (one bearing a high wooden crucifix) bear their respective parts in a characteristic manner.

Mr. Lockhart returns for a theme to the pages of "Gil Blas," and has never been more successful than in his rendering of the scene where the hero narrates his adventures to the Licentiate Ledello. The uncontrollable mirth of the gouty old Churchman, and the anxiety of his housekeeper as to its effect upon her master, are happily hit off. The execution is in Mr. Lockhart's usual broad and effective manner and brilliance of colour, the yellow satin in the young adventurer's costume forming the key-note. W. Mactaggart more than maintains his ground in the rendering of effect in sky and sea. There is the same uncertainty in regard to drawing as hitherto, but the canvasses have less of that rough painty look which used to be so unpleasant. His "Lobster Fishers" suggests the steady strong breeze and scudding movement of the water much more effectively than if there had been an endeavour to give more definite form to the waves, and while a boat is pitching and tossing the eye cannot take accurate account of details in the costume, &c., of the occupants.

If W. B. Hole has not achieved a great success in his rendering of the fourth scene of the second act of "Henry IV.," he has at all events steered clear from caricature, and produced a picture worthy of admiration, although it may not excite enthusiasm. *Falstaff*, *Prince Henry*, and *Poins* are each fairly represented, and their respective characters accurately discriminated. The drawing is careful, the composition excellent, and the colouring pure and effective. The influence of Orchardson may be discerned in the manner of treatment. But Mr. Hole has never been content to confine himself to one class of subjects, although these have been hitherto of an historical or narrative description. He now appears as a landscape and figure painter, and the "Night Catch," representing fishermen landing herrings caught over night, will bear favourable comparison with any work in the rooms of a similar description. It is not only remarkable for the truthfulness and accuracy of the details, but for the effective rendering of the early glimmer of the rising sun over sea and rock.

It is with delight that we hail the return of Sir Noel Paton to the realms of Fairyland. He is in a more congenial atmosphere there than when engaged in the attempt to excite the sentimental susceptibilities of pious old ladies. His Scriptural subjects are too pretty to be profound; but a fairy is nothing if not pretty, and profundity would extinguish her; and very pretty is the spirit who is challenged by the mischievous *Puck*. She is a creation as harmless and fragile as a butterfly,—a thing of beauty, which has its use to those who have clearness of vision to appreciate and understand it.

We regret to see that Mr. Robert Gibb has thought proper to put aside that with which he is familiar, what he can test by observation and experience, and to attempt to define that which he can only guess at. Sea kings were probably very grand and brave fellows, but their bravery can only now be to us of the melodramatic sort, and cannot, in the nature of things, raise the same feelings as did the real heroes who stood in a "thin red line" on the heights of Alma. This "Sea King" we have here, what is he? A fine-looking, muscular fellow enough, with a vest of chain-armour, bare shapely arms, a martial-looking face, a well-trimmed luxuriant moustache, and shaven cheeks and chin. He is not the real Norseman, but a modern dragoon got up to represent such. And so, too, with the "Last Voyage." Who feels any sympathy with the voyagers who convey the Viking to his last resting-place? Were there no burials in the trenches at Balaklava or the sands at Tel-el-Kebir? The author of the "Thin Red Line" can do better things than what we have here.

Amongst the landscapes (pure and simple) one of the most noteworthy is David Farquharson's "Links of Forth." From a height overlooking a mass of russet foliage, the eye ranges over the vale of Forth, where the river winds "in and out and round about" in so remarkable a manner,—a scene that must have struck every trrveller who has passed Stirling on his way to the North. Another impressive scene, although of quite a different sort, is R. Macgregor's "Crossing the Holy Island Sands," where a number of figures are wending their way across the level expanse, half-veiled in mist. Mr. Macgregor adopts a different *rôle* in "A Critical Moment," where a stalwart reveller stands, pistol in hand, upon the snow-besprinkled ground ready to meet the companion with whom he has quarrelled.

Gloomy and impressive is the "Lochan Dhu" of John Smart, and J. Campbell Noble shows poetical feeling in the picture named "As through the Land at Eve we went."

LEAD POISONING.

THE HUDDERSFIELD WATER CASE.

The case of Milnes *v.* The Mayor and Corporation of Huddersfield (52 *Law Journal* Reports, p. 65), which was recently decided by Mr. Justice Mathew, and is reported in this month's legal reports, has an interest for various persons. It is a case which not only affects the general public, but cannot be passed by without notice by scientific men and by lawyers. The facts out of which the action arose were most simple. The plaintiff, Mr. Mills, resided in Huddersfield, and the Corporation were the body who supplied water to the town. The water to the plaintiff's house was conducted from the mains through a lead service-pipe, which was the material invariably used at Huddersfield for this purpose.

In the middle of the year 1881 Mr. Milnes was attacked by an illness, the cause of which seems for a long time to have been undiscovered by his medical adviser. He got worse instead of better, and the symptoms at length clearly showed that he was suffering from lead-poisoning. The water in the house was forthwith analysed, and the presence of lead was discovered in it, and ultimately it was admitted on all hands, and at the subsequent trial, that Mr. Milnes's condition was due to his use of the water which had become contaminated with lead absorbed from the service pipe. There were some other facts material to the case which must yet be mentioned. By section sixty-six of their private Act the Corporation were entitled to prescribe the material to be used for service-pipes, and by their by-laws it might either be lead or cast-iron. On the other hand it appears that by section forty-eight of the Waterworks Act, 1847, the consumer has the power of compelling the Corporation to supply him with water through a service-pipe made of a material not selected or approved by the Corporation. Again, the pipes when laid belonged to the consumer, and the cost of laying them was paid by the consumer. By section thirty-five of the Act of 1847 the Corporation were bound to have in their mains pure and wholesome water, but nothing was said about the water when it reached the consumer's premises. It was under these circumstances that Mr. Milnes brought an action for damages against the Corporation, and we may say at once that Mr. Justice Matthew decided, and, if we may say so, rightly decided, that the Corporation were not liable for the injuries which Mr. Milnes had suffered. It appears to be a correct decision, because there seems to have been no breach of any duty on the part of the Corporation. The water in the mains was undoubtedly wholesome, the material of which the service-pipes were made was generally considered a proper material for such pipes; the consumer could if he desired have had other material, and the service-pipes did not belong to the company. Thus, when they turned the water into the consumers' pipes they turned in wholesome drinking-water. It is a matter of regret when a man suffers serious injuries, but it is not less a matter of regret if other persons, even a Corporation, have to pay damages when they have not done any thing improper or illegal. Therefore, as we have already said, it appears certain that a consumer, under such circumstances as we have mentioned, cannot make the body which supplies the water liable for damages.

But, on the other hand, it is clear that this case is one of much more than mere general or legal interest. It must make every one who receives water for his house through lead service-pipes doubtful if it is safe to drink it. "No clear explanation," said Mr. Justice Mathew, in the course of his judgment, "of the cause of the contamination of the water supplied to the plaintiff was given by the scientific witnesses called on either side. It was stated that soft water like that supplied to Huddersfield usually contained ingredients which seemed to form an insoluble coating to lead service-pipes, and prevented the absorption of lead. It was not explained why this protective process had not taken place in this particular case. There was evidence to show that some persons who were peculiarly susceptible of the poisonous property of lead, and that so small a quantity as one-fortieth of a grain of lead per gallon of water might be injurious." Then the judge further points out how scientific witnesses had stated that the amount of lead absorbed in water varied according to its nature, and how they were unable to explain how the plaintiff's water had been so much contaminated, or how the plaintiff alone had been so seriously injured. But all this must make every one suspicious of lead pipes; for who can tell whether his constitution is or is not susceptible of lead poisoning until he has passed through the ordeal? Or, again, how is it possible to keep water always of a character as not to absorb lead? On the other hand, there is a danger lest too broad conclusions should be drawn from an apparently isolated case. Still, as the matter stands, it is obvious that lead service-pipes are open to much suspicion; and next, that water companies should have the question closely investigated by careful scientific observation. One thing, at any rate, is certain, after this case, that the public can have no confidence in water conveyed through lead service-pipes.

THE STORY OF THE ASHBURNHAM MSS.

The extraordinary interest connected with the Ashburnham collection of MSS.,—which, it is to be hoped, will soon become the property of the nation,—is such as appeals not alone to the bibliophile, but to the artist. The extreme rarity of the specimens of the illuminator's art of the sixth, seventh, and eighth centuries, which render the collection so unique, has, now that the library is in the market, excited abroad a no less lively interest than has been manifested by the press at home. This interest has, however, been carried to the highest pitch in Paris by the startling disclosures concerning some (and those the rarest) of the Ashburnham MSS., made only a few days since before the French Academy of Inscriptions by the learned administrator of the Bibliothèque Nationale, M. Leopold Delisle.

On February 22nd last, M. Delisle read to his *confrères* of the Academy of Inscriptions a lengthy paper relating to the sad story of the manner in which some of the choicest treasures of the Ashburnham collection came into the possession of their present owner.* Some three years ago, it may be remembered, M. Delisle so successfully proved that the fragment of the antique MS. Pentateuch in the possession of Lord Ashburnham had been torn from the original volume in the Lyons library, that his lordship most generously restored to its old home the treasured MS. The same learned authority has now come forward with unassailable evidence to prove that many other of the choice MSS. of the library of Ashburnham Place entered that collection through the no less reputable means than the direct robberies committed by M. Libri,—whose trial for his culpability is a matter of history,—in the libraries of Lyons, Tours, Orleans, and Troyes. M. Libri, a distinguished bibliophile, Inspector-General of the Public Libraries, and a naturalised Frenchman holding (before his conviction) a position in France almost equal to our own Dibdin, sold to Lord Ashburnham's father, it may be remembered, some of the rarest of the MSS. in the collection, the purchase of which is now the object of so much discussion on the part of the Trustees of the British Museum. Of the MSS. which passed into Lord Ashburnham's library from the Libri collection, M. Delisle has now shown that no fewer than six were stolen from the Lyons library, four from that of Tours, two from Orleans, and one from Troyes. The proofs to support this startling statement cannot be set aside, for they are founded on a comparison of the types of handwriting, the nature of the vellum, the dimensions of the volumes, the ink used, the length of the lines, the character of the illustrations, and the gaps in the original volumes which the Ashburnham fragments exactly fill up, together with many other points which we are afraid only too conclusively afford evidence as to the truth of the fraudulent manner in which these rare and priceless relics of the early centuries of the Christian era, sold by an eminent but unscrupulous bibliophile to the father of Lord Ashburnham, were obtained.

We can well understand how M. Delisle, knowing the interest to the French cultivated public of the library, the destination of which is now hanging in the balance, felt little hesitation in occupying the attention of his brother Academicians by the singular disclosures his research has enabled him to make. As has been made known to the public (particularly by the brilliant article recently published in the *Times*), some of the choicest treasures of the Ashburnham Library passed into that collection from those of the French bibliophiles Libri and Barrois; while the MSS. themselves are works either executed in France, or composed, as M. Delisle remarked, of documents intimately connected with the history, literature, and art of France. M. Delisle, it would appear, has never had the good fortune to see the Ashburnham MSS.; the collection indeed, is one which, being somewhat rigorously guarded, is almost unknown except by reputation. It is chiefly by the various published catalogues and by the invaluable report on the collection made by Dr. Zangemeister to the Viennese Academy, that M. Delisle has established his means of comparison with the facts his researches have revealed. As far back as 1866, it would appear, M. Delisle satisfactorily proved that no fewer than sixty of the MSS. sold in 1849 by Barrois to Lord Ashburnham were the result of a series of robberies committed by Barrois from the Paris Bibliothèque Nationale, a fact fully acknowledged, indeed, by Lord Ashburnham himself.

As for the MSS. from the Libri collection, they, as M. Delisle shows, are of no less suspicious a source. He thereupon takes up what he calls the *pièces de résistance* of the collection, the very features which are specially mentioned as the choicest treasures, and foremost amongst which stand the seventh-century Pentateuch,—a volume of inestimable artistic value as representative of the art of this distant period. This Pentateuch M. Delisle shows, beyond the question of a doubt, to have originally belonged to the cathedral of Tours. By a quotation from a catalogue of 1706 the volume is mentioned as having been at that date in the collection. With the Revolution the precious MS. passed to the library of the town, where it was seen as late as 1840. Libri himself, indeed, notices the volume in the account of a visit made to Tours, and inserted in the *Journal des Savants*. When, however, in 1850 a detailed catalogue of the library was prepared, the MS. had disappeared. Now, in 1847 Libri sold to Lord Ashburnham a Pentateuch the excessive rarity of which the French bibliophile did not fail to expatiate upon. His statement that the paintings were executed by Romans, were far more numerous and were in a state of conservation far superior to those in the Virgil of the Vatican, is in no way exaggerated; his story of the MS. having come from the abbey of Grotta Ferrata has, however, since been shown by Dr. Zangemeister to have simply been one of the many tales vamped up by M. Libri to conceal the real source of many of his treasures. Lord Ashburnham, indeed, it would appear, loyally admitted to M. Delisle the suspicious circumstances connected with his possession of the relic. "Different manuscripts of the Libri collection" (his lordship wrote, June 16th, 1869), "contain what I have long suspected, and what you have shown to be, fraudulent attempts to hide the true origin of books which had been either lost or stolen."

The fragment of the Psalter which has been cited as one of the marvels of the Ashburnham collection is now shown to have an equally suspicious origin, and so with many others of which we have not time to speak. We can well understand the indignation with which M. Delisle comments in his paper, read before the Academy of Inscriptions, on the series of acts of Vandalism which have resulted in suppressing and disfiguring texts precious as literary and historical memorials.

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[*] We are indebted to the report *in extenso* of M. Delisle's paper, printed in the *Temps* of Sunday, February 25th.

ARCHÆOLOGY IN YUCATAN.

Mr. Aymé, the American Consul at Merida, has transmitted to his Government a report on Yucatan, and incidentally he mentions that scattered all over the two States of Yucatan and Campeche are found the ruins of large cities. These ruins were first brought prominently to the notice of the world by Mr. J. L. Stephens forty years ago. Since that time, with one or two exceptions, these ruins have remained unvisited, though two of these cities are now pretty well known to the world, viz., Uxmal and Chichen Itza. These ruins are described by Mr. Aymé as the grandest on the American continent, and he gives the following short account of them:—They consist of large buildings very solidly built of stone, elevated on one or more huge mounds or terraces, and covered usually with sculpture of a peculiar character, all in very high relief. Hieroglyphs are few. Exquisitely-worked statues are found from time to time, as, for example, the great statue found at Chichen Itza by Dr. Le Plongeon, now in the Museo Nacional in Mexico. Discussion is rife as to the age of these structures; on the one hand, great antiquity is claimed for them, while on the other it is asserted that they are not 1,000 years old. Be their age what it may, one fact seems certain,—they are the relics of a high civilisation which existed before the white man's arrival, and they are the grandest and most satisfactory relics of that civilisation. But these noble ruins are fast perishing, carrying into oblivion the histories of the peoples who built them. Mexico has not the means to prosecute research amongst them, and, adds Mr. Aymé, the Americans "leave the treasures of American archæology at our very doors and send our money and brains to swell the mighty army of searchers of Greek and Roman antiquities."

ELECTION OF A SURVEYOR FOR THE DIOCESE OF NORWICH.

Two of the surveyors for this diocese having resigned—Mr. E. L. Blackburne, F.S.A., from ill-health, and Mr. J. H. Brown for other reasons—the Bishop, Archdeacons, and Rural Deans met at Norwich on Saturday, the 24th of February, to elect one surveyor in their place. There were thirty-three candidates. Amongst them Mr. J. P. Seddon, Mr. E. W. Tarn, Mr. E. Boardman, Mr. J. B. Pearce, Mr. W. O. Milne, and Mr. J. Arthur Reeve. After several divisions, Mr. Reeve, of Great James-street, London, was duly elected. The surveyors for the Norwich diocese are now Mr. R. M. Phipson, F.S.A., and Mr. Reeve.

The Committee of the Bewick Club, recently instituted in Newcastle-on-Tyne, have unanimously elected Mr. D. Croat Thomson an honorary member. Mr. Thomson is the author of "The Life and Works of Thomas Bewick," and is the first honorary member of the club.

LECTURES IN ARCHITECTURE AT THE ROYAL ACADEMY.

COLOUR.

MR. GEORGE AITCHISON, A.R.A., lectured on "Colour" at the Royal Academy on Wednesday evening last, Sir Frederick Leighton, P.R.A., being in the chair. The lecturer commenced by observing that as it was impossible to embrace so vast a subject as "colour" in one lecture, even when its application to architecture alone was to be considered, he should confine his remarks in the present lecture to colour applied to the outsides of buildings, hoping to be able to treat of inside colour on some future occasion. Proceeding to show that man had a passionate love for colour, whether exhibited in Nature's works or in works of art, that he had directly employed the beautiful things of Nature to adorn his temples or dwellings, and that colour had almost always been used to enhance the beauty of buildings, the lecturer remarked that colour (if we included white with its gradations to black) was the only visual means by which things could be known, and if there were persons so unfortunate as to be totally colour-blind, they saw only the shades and shadows of things. By the general consent of mankind, the arrangement of certain colours in certain proportions caused delight; in fact, for the bulk of mankind, nature had made almost every phase of earth, air, fire, and water beautiful. When people went into the country for a holiday, it was mainly to feast their eyes on the beauty of colour. Why were the painters courted and the sculptors neglected, but because the former dealt in colour, that all knew and loved, and the latter in a white abstraction from "the human form divine"? People loved landscape painting because it preserved for their admiration such evanescent phases of Nature's colour that struck them as most lovely or most harmonious. They loved figure-painting mainly because it gave them the exquisite and subtle tones of flesh, and its harmony with the colour of hair and eyes, with lovely and gorgeous robes, with armour, with sky, water, landscape, or architecture. Landscapes were always open-air effects, and in numberless instances figure subjects were so too. Titian was particularly fond of open-air effects, and some of his most gorgeous colouring combined flesh and robes, trees and water, architecture and sky. To name no other examples as illustrative of this, we had his "Bacchus and Ariadne" in London, and his "Virgin and Child" in the Louvre. If, then, superb pieces of colour could be culled from Nature and put on a canvas to enchant us, a building might be substituted for a canvas, and be made equally superb in colour. In the bas-relief of Scilius we saw the servant fixing up garlands on the house. Here, then, was a direct application of beautifully-coloured leaves, fruit, or flowers to adorn a building, and to this day wreaths and garlands were so used in Italy. Everybody had admired the labourers' white-washed cottage latticed with rose-trees, or a red-brick cottage trellised with white roses, the fire-thorn, or the purple jasmine of Japan, or with clematis, wistaria, or the passion-flower. Either cottage was beautifully ornamented when covered with the grape-vine full of bunches of green, purple, or black grapes, not to speak of those houses wholly green with ivy or glowing with the red leaves of the Virginia creeper. It was only during the last century, and at occasional epochs, that buildings had been left to the monotone of one material. The Persians, the Assyrians, the Egyptians, the Greeks, the Etrurians, the Chinese, the Japanese, the Mexicans, the Peruvians, the Arabs, Moors, and Turks, all enriched their buildings with colour, and the Gauls, the Germans, the Scandinavians, the Goths, Huns, and Vandals did the same; while all that group of nations whom we called the Mediævals made their buildings striking, at least, by the aid of colour. We naturally asked why colour had disappeared from the outside of modern buildings, for till quite lately we only allowed ourselves whitewash, green outside shutters, a red chimney-pot, and a gilded weathercock. Though in this country Puritanism might have something to answer for, in Italy Palladio had more, for he said that "white was more acceptable to the gods." Beyond these two factors, however, the lecturer believed the main reason to be that external architectural adornment was mostly of perishable materials, and in bad times was not renewed, so that many generations had grown up without ever seeing a coloured building, and any novelty shocked mankind's conservative instincts. He remembered the storm aroused by Owen Jones's colouring of the Exhibition Building of 1851. He had been to Egypt and seen colour on a grand scale there, and he had studied the colouring of the Moors. On the other hand, his critics knew no colouring but the detestable application of gold on white they had seen at Versailles, or perhaps some pale pea-green and gold in their own drawing-rooms. Viollet-le-Duc wrote:—

> "The Romans under the Empire seem to have been the first people who erected monuments of white marble or stone without colour; as to their coats of stucco, these were coloured inside and out.
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> Decorative painting played an important part on the outside of buildings. The front of Notre Dame at Paris shows many traces of painting and gilding, not put upon the bare walls, but upon the mouldings, columns, sculptured ornament, and figures. The same observations can be made under the porch of the Cathedral of Amiens; and the ornaments placed in 1257 on the top of the transept gables of Notre Dame were gilt, with grounds of dull red and black. The colouring applied to the outside is much more vivid than that of the interior; there are bright red tones (vermilion glazed with brilliant red), crude green, orange, yellow-ochre, blacks, and pure whites,—rarely blues,—for outside, the brilliancy of direct light and shadow allowing a harshness of colouring which would not be supportable under the sifted and diffused light of the interior."

The lecturer observed that the late Mr. Burges and himself, in their travels together, found traces of colour on the porch of a church at Villeneuve l'Archevêque. Viollet-le-Duc, after giving further details of the external decoration of Notre Dame, went on to make the following reflection:—

> "Why do we deprive ourselves of all these resources of art? Why does the Classic school pretend that coldness and monotony are the inseparable accompaniments of beauty, when the Greeks, whom they present to us as artists *par excellence*, always coloured their buildings inside and out, not timidly, but by the aid of colours of extreme brilliancy?"

Having described the way in which some of the buildings of Venice and other Italian cities are coloured externally with frescoes and other decorative work, the lecturer referred to examples of external polychromy applied to buildings shown in pictures by Giotto, Benozzo Gozzoli, Luca Signorelli, Pinturicchio, and other masters, and expressed the hope that his lecture would not merely afford his hearers innocent amusement for an hour, nor simply inform them on certain historical points of art, but would bear fruit by turning their attention to the adornment of England, and even of those widely-spread colonies and dependencies to which some of them would, he hoped, go, and so be able to practise in countries where the sun was ever glorious, and not mostly hidden in clouds or mist. In Persia, a country which he had not yet seen, he believed there was to be found the most magnificent exposition of extreme colour applied externally to buildings, and executed, too, in that splendid and imperishable material, enamelled earthenware. Mr. C. Purdon Clarke, who had resided in Persia, and secured for England the Persian architects' pattern-books, described the effect of the coloured architecture of Persia as being splendid, and satisfying to such a degree that he not only did not desire to see it altered, but could not see how the colour could be improved. The lecturer exhibited examples from M. Pascal Coste's work on "The Modern Monuments of Persia," showing the upper portions of two minarets and half the upper part of the entrance to the Mosque of Mesjid-i-Chah at Ispahan, built in the sixteenth century by Shah Abbas. Through the courtesy of Sir Philip Owen and Mr. Armstrong he was able to show a piece of magnificent tile-work from Ispahan. The attention of the audience was also drawn to some drawings of splendid tile-work from India, in which unusual harmonies were obtained with a rich brown and pale fawn colour on a magnificent deep blue ground. Splendid colour was, as a rule, only to be found in the East, or had been obtained from it. The lecturer strongly suspected that all the fine colour in Europe came directly or indirectly from the East. First it filtered through to Constantinople, skilled men being sent thence to execute works in different parts of Europe. The churches, mausoleums, and mosaics of Ravenna were, he believed, executed by architects and artists from Constantinople, and probably the mosaics of the churches in Rome, Sicily, and elsewhere. It was known that St. Mark's, Venice, and the mihrab of the Mosque of Cordova, were done by them. The Crusades enabled the Westerns to see something of the glories of the East, and the plunder familiarised those at home with Eastern colour and workmanship. Afterwards this impression was kept up by the traders who visited the East and trafficked in its goods with the Pisans, the Genoese, the Venetians, the Portuguese, and the Dutch. There was very little doubt that that very effective method of outward adornment, horizontal stripes in different colours, was brought from the East. The red and black stripes in the buildings of Cairo were to be seen repeated in the Cathedral at Genoa, and in buildings at Pisa, Florence, and Siena, though in Italy the bands were mostly of dark green Serpentine alternating with white marble. Having described the leading materials used in the exterior of St. Mark's and the Doge's Palace at Venice, the lecturer observed that in many Italian buildings happy effects were obtained by filling in the ground of carved ornament with mosaic of green, gold, red, black, or other colours. Perhaps the most striking example of modern external polychromy was a palace at Berlin. Its walls were faced with black and red compressed tiles in a diaper; the window dressings were in majolica; and the frieze was in coloured glass mosaic on a gold ground. At the time the lecturer saw it, some eight or nine years ago, it was not pleasant to reflect that the tiles were probably English, the majolica Minton's, and the mosaic from the English Company at Murano, and that no such complete attempt had been made in this country. In Paris, there was the Opera House, where polychromy of a very delicate and dignified character was obtained by means of marble, bronze, and gilding, with a very slight admixture of enamelled earthenware on the flanks. The lecturer borrowed the following words of M. Charles Garnier's dream of the future of Paris from M. Paul Sedille's address on monumental pottery,—

> "The grounds of the cornices will shine with eternal colours; the piers will be enriched with sparkling panels; gilded friezes will run along the buildings: the monuments will be clothed with marbles and enamels; and the mosaics will make all love movement and colour."

M. Sedille himself, one of the apostles of colour, had already enriched parts of France with buildings wholly or partially coloured, and he was now engaged in converting what the Romans called an "island" in Paris into one huge building for the sale of drapery. Two sides of the building were already built. The upper parts of each of the towers flanking the façades, built of brilliant white stone, were panelled with glass mosaic on a gold ground, the whole looking most brilliant and satisfactory in the sunshine of Paris. The front of the Turkish baths by M. Parvillée, the author of "Architecture et Decoration Turques," was faced with enamelled tiles of Turkish patterns and colours. Architects in France were not wont to lavish praises on the works of English architects; therefore the following flattering remarks by M. Sedille might be quoted with all the more pleasure:—

> "Certain new constructions in London are truly grand. The friezes ornamented with terra-cotta and enamelled, mosaics on a gold, ground become the decorations of *façades*. Certain halls and public establishments are completely covered with painted earthenware, developing decorative composition with true style."

We also, then, should celebrate the pioneers of colour in London, and endeavour to cull instruction from their works; and, even if they had in some respects failed, they were to be thanked for their daring in being the first to emancipate us from drab, and to open for us that path which would eventually lead to the covering of London with beautiful and imperishable colour. M. Hector Horreau put medallions of colour on a house in the Avenue-road. Mr. S. S. Teulon designed the building covering a fountain at the corner of Great George-street, Westminster,—a structure once brilliant with colour, but now nearly black. Sir Gilbert Scott designed the Albert Memorial in Hyde Park. The front of a bookseller's shop in Piccadilly, designed by Messrs. Ernest George & Peto, is enriched with figure-subjects in opaque glass. The front of St. James's Restaurant is enriched with mosaics on a gold ground. Sir Digby Wyatt designed a shop in Gracechurch-street of iron and encaustic tiles, now pulled down. Some of Messrs. Doulton's buildings at Lambeth are ornamented with glazed stoneware and "jewels," and their name is set out on panels of enamelled ware enriched with a pattern in colours. A shop in Bond-street has a part of its front faced with encaustic tiles. A railway station in the Finchley-road is enriched with stoneware and "jewels," and its passages and platforms are lined with white and grey bricks in bands. And, lately, two warehouses had been built in the City,—one, in Knightrider-street, wholly of glazed bricks and iron, the piers being of greenish-white glazed bricks, with grey bands, and plinths of dark brown; the walls above white, with grey bands; the architraves of the windows, string-courses, and cornice in brown enamelled bricks with impressed patterns; joining the upper and lower windows are frames of grey glazed bricks with the edges moulded, and panelled with brown glazed bricks with impressed patterns. The architect of the other warehouse, in Little Moorfields, had not so frankly accepted the glazed ware. Yellow and red terra cotta, Victoria and Portland stone, and blue Staffordshire bricks, are used in conjunction with dark red glazed bricks and tiles, with large glazed ornaments of a rich brown, and with white and grey glazed bricks. Time alone could show how these different materials worked together. Even now the yellow terra-cotta cornice of the ground-floor was getting black. Both of these warehouses were rather prepossessing examples of polychromy in broad flat tints. There is a very successful piece of partial polychromy in Lisson-grove, a warehouse built of white bricks with terra-cotta pilasters, strings, and cornices, having a wide band of enamelled tiles round two fronts on the first floor. There is some successful glazed earthenware in white and yellow outside the South Kensington Museum; and a garden wall in Springfield-road, N.W., is wholly of brown and red glazed bricks, with the capping and gate piers of glazed stoneware. This example was cited rather as illustrating the capabilities of the material than as being wholly successful in point of colour. As regarded painted work there were two very notable examples,—a shop in Berners-street and a house by North Gate, Regent's Park. The pilasters of the former are red, ornamented in gold with gilt capitals, with coloured and ornamented panels between, with the heads of musicians on a gold ground in imitation of mosaic. The lecturer believed that this example was designed by Mr. Pearson and carried out by Messrs. Clayton & Bell. The other example was the house of Mr. Tadema, and had its front treated mainly in yellow and white, with yellow columns to the porch and a light-coloured Greek ornament on the dark blue background of its frieze. At the back, two blank arched spaces had been treated by white and red lines and small coloured forms on a black ground. These blank arches had small windows at the top, whose splays and heads had been left white, with ornament in the shape of coloured lines and "jewels." It could not but be regretted that from our wretched leasehold tenure so little good work was done in London, and that when it was done it was mostly in perishable materials. Had these houses been the proprietors' freehold, the work would probably have been executed in permanent materials. It was painful to think of these works perishing, not only from the loss of the skill and labour employed on them, but from the extinction of personal memorials of artists,—artists who had been pioneers in a right way. Mention was made of the purple-red houses to be seen on every side, and which looked as if dipped in that

> "Little brook whose crimson'd wave yet lifts
> My hair with horror,"

which Dante told of,—though, perhaps, as a protest against drab they were to be welcomed. The *sgraffito* work at South Kensington and elsewhere was mentioned, as well as an office in New Bridge-street, Blackfriars, built some years ago of different-coloured granites; but all rough-surfaced materials so soon became blackened when used externally for building in London that it was almost waste of skill to use them, and waste of time to describe them. The question now is, How can we redeem our buildings from their hideous monotony, looking as they do, in misty weather or in twilight, like ghastly white or grey spectres? In England generally it was not very easy to get the permanent colour that was required, on account of the damp, for in the country all porous materials afforded foothold for moss and lichens, red roofs soon becoming green, yellow, or grey; and stone itself became draped with lichens. It was, however, in London and the large manufacturing towns that the greatest difficulty arose, as any partial colouring in glazed materials in combination with rough and porous ones soon got out of tone, the glazed work standing out from its blackened surfaces like the teeth of a grinning negro. Man's perverse ingenuity was shown in his using coal so that a large part of it was unburned. The air thus became filled with soot, which choked his lungs and skin, and covered his trees and buildings with a black pall. It was needless to speak of the damage done by the carbonic, sulphuric, and nitric acid with which the truly infernal atmosphere of London was charged. Cobbett called townsmen "wen-devils," and, therefore, they now had an atmosphere congenial to them. No marble used outside would stand this climate, as was proved by the Oriental jasper columns of the Grosvenor Gallery, or by the Breccia columns of a shop near Oxford-street, or by any marble slab let into the front of a building. Red and green porphyry and some of the granites were the only natural materials that would stand. Bronze stood pretty well, and glass-mosaic and glazed stoneware and earthenware were practically imperishable. The white tiles once so largely used outside would soon perish, the cause of this being (he was told by an expert) that they were of porcelain of fine porosity, readily taking up moisture, but not so readily parting with it as materials of coarser porosity, hence their great liability to be burst by frost. Brown, pink, and grey polished granites, even in conjunction with the porphyries and bronze, made but a sombre building, and were, too, imperial materials, that only a nation, a town, or a very wealthy man could afford to employ. Glass mosaic, too, was very costly; and in connexion with it it should be observed that a gold ground in a dark setting was too light and cold, and should be more copper-coloured. If the buildings in London and our large manufacturing towns were to be made clean, gay, and beautiful, we must, the lecturer thought, rely solely on enamelled brick. And what a field would thus be afforded for design in colour, in ornament, in landscape, and in figures! It would be a healthful material, for it would lighten our streets and keep them cleaner; and it would be cheap, for the tenants would only have to wash the fronts of their houses instead of painting them. Mr. Aitchison concluded by quoting an objection and its answer in the words of M. Sedille:—

> "If an objection be raised that this ornamental glazed ware so widely spread may increase the number of bad examples, I answer that there are, too, good and bad books, yet no one is inclined to deny the utility of printing. It will belong to our brother architects to create good examples, or, at least, to choose them."

THE PANDORA THEATRE.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

On Saturday afternoon last a large number of the members of the Architectural Association visited the Pandora Theatre, Leicester-square, now in course of completion ready for opening at Easter. The visitors were received by Mr. Thos. Verity, the architect from whose plans and under whose superintendence the building erected a year or two ago on the site of Savile House for the exhibition of panorama is being converted into a theatre. The theatre will be one of the largest in London, seating about 3,000 persons in conformity with the regulations imposed by the Lord Chamberlain and the Metropolitan Board of Works. The greater portion of the oval interior used for the exhibition of panorama is utilised as the auditorium, a piece of the northern end of the oval being cut off to make way for the orchestra and stage. The oval roof of the panorama building, mainly constructed of iron, with a surmounting lantern, is retained, some of the principals at the northern end being shortened, and let into the upper part of the wall which is carried up over the proscenium opening. For the purpose of obtaining a spacious stage, some property at the back of the panorama building has been acquired. The front or southern portion of this building is retained, and from a large entrance vestibule a staircase on the left hand gives access to the arena stalls and the pit. Behind the pit and stalls, extending round the auditorium from the prompt to the o.p. side of the orchestra, is a promenade 150 ft. long by 12 ft. wide, giving access to staircases of entrance and exit. The total length of the auditorium is about 85 ft., by 87 ft. wide. The proscenium opening is 35 ft. wide between the brickwork, and 33 ft. high. The stage is about 60 ft. wide by 50 ft. in depth from back to front, and in the centre of the back of the stage is the green-room, 15 ft. by 20 ft., the area of which can be added to the stage when necessary by raising an iron shutter. On one side of the green-room is a staircase going up to the females' dressing-room block, and on the other side is a staircase leading to the men's dressing-rooms. There are in all about thirty dressing-rooms. Property-rooms and scene-docks are provided at the sides of the stage. Passing through the vestibule from the Leicester-square entrance, access is gained on the level to the first or private-box tier, in front of which will be rows of balcony stalls, projected some distance beyond the supporting columns running up through the tiers by means of concealed iron cantilever construction. At the back of the boxes on this tier is a continuous corridor, 8 ft. wide, giving access to the boxes. At the level of this corridor, and approached from it on the o.p. side, is a special exit corridor leading out to the street at the back of the theatre. This special exit corridor is also accessible by means of staircases from the pit and dress-circle tier. From the entrance vestibule rises the principal staircase, leading to the dress-circle tier and to the *foyer* above the vestibule. At the back of the dress-circle tier there is a continuous corridor, 15 ft. wide by about 150 ft. long. From this corridor access is obtained to the private boxes, and there are gangways at intervals leading into the dress-circle stalls. From the *foyer* a good view will be obtained of the stage. All the exit staircases are 5 ft. wide, with stone steps (no winders) enclosed between brick walls. The third or upper tier will form the gallery, with, possibly, a row or two of seats in front, to be styled the "amphitheatre stalls." This tier will be reached from Lisle-street, on the prompt side, and additional means of exit will be provided by the special large exit corridor already mentioned. Above the gallery entrance are some dressing-rooms, and a large room for the ballet. The grid-floor is 44 ft. above the level of the stage, and the flies are about 20 ft. high by 13 ft. wide. Beneath the stage there is a large well, 21 ft. by 40 ft., and about 8 ft. deep below level of floor under stage. This well, which is lined with concrete, is, of course, intended for use in connexion with the mechanism of scenic effects. Beneath the iron roof, which will be, as we have said, retained, a *velarium* will be suspended, as at the Royal Albert Hall. Internally, the finishings will be in fibrous plaster, executed by Messrs. George Jackson & Son, of Rathbone-place. The whole of the constructional ironwork in the three tiers and elsewhere has been carried out by Messrs. Dennett & Ingle, who have also done all the concrete work. The scagliola enrichments of grand staircase and other parts of the building will be executed by the well-known firm of Bellman & Ivey, of Wigmore-street. The balustrade to staircase is in this material, and has red Devonshire die, Genoa green capping, and brown Belgian base and plinth; the columns and pilasters are of red Devon, with lower portions boldly moulded in red Serpentine and circular black plinths. This work is likely to be very effective when finished, owing the adoption by the architect of simple forms in design and mouldings, and it promises to be one of the best pieces of work of its kind in London. Messrs. Merritt & Ashby are the general contractors, their foreman being Mr. Walter Mitchell. The clerk of works is Mr. James Dewey.

Birmingham Architectural Association. The sixth ordinary meeting of this association was held at Queen's College, on Tuesday evening last, the President, Mr. J. J. Bateman, occupying the chair. A discussion took place on the relative merits of the Gothic and Classic styles of architecture and their adaptability to modern requirements. The following members took part in the discussion:—Messrs. W. H. Kendrick, V. Scruton, Norman Gething, F. Simon, W. G. Mantel, and Franklin Cross (hon. secretary), a vote at the close being declared by a large majority in favour of the Gothic.

ART-REVIVAL IN RUSSIA.

The great progress achieved by the Russians in developing their home industries has been prominently illustrated by the schools of industrial art, and the exhibitors who participated in the grand national exhibition held this winter at Moscow. The Russians have not relied only on the exorbitant dues levied on foreign importation for the encouragement of home industries, but have sought, by the influence of technical education, and the revival of art teaching, to raise the general standard and value of home products. In this respect, the archæological studies to which so many Russians have devoted themselves during the last twenty years have been of considerable service. When railways and modern civilisation were first introduced into Russia, a movement naturally arose which led to a servile imitation of Western art. Indeed, even before railways, and, perhaps, since the time when Peter the Great wandered so far afield, there has been at least among the upper classes of society a tendency to adapt Western ideas and to neglect what might be qualified as national inspirations. The archæologists, however, have disinterred the ancient Russian art, which lay dormant in the heart of the people, appealed to their natural instincts, and was the expression of Russian genius. Whatever its abstract merits may be, the Russian is more apt to produce good work when working in the manner most in harmony with the native taste of his race. This fundamental principle has now been fully acknowledged, and the result is the daily production of admirable art-work of the Russian school.

In Russia art finds its most popular expression in the goldsmith's work. On all possible occasions gifts of plate, jewelry, and gold ornamentation are made, and these commemorative presentations are a great incitement to the art-workers of this craft. Their section is the most remarkable at the Moscow exhibition, and, among the exhibitors whose names are best known, we might mention Messieurs Sazikof, Chliebnikof, and Ovtchinnikof. The latter, by his inventive and adaptive genius, has strikingly demonstrated how the native style is admirably suited to work in precious metals. M. Ovtchinnikof has contrived to modify to some extent the appearance of the enamels or precious stones intermixed with gold and silver, so dear to the Russian, but somewhat gaudy in their effect upon the eye of the Western critic, by introducing colouring of a more subdued or æsthetic character. He has further succeeded in reviving the Byzantine process of enamelling mouldings. Enamel imitates the flesh, while chased gold and silver constitute the limbs and bodies of a representation of Christ and the twelve apostles to be seen at the exhibition. From the Japanese, the same manufacturer has learned how to introduce designs, leaves, &c., of silver in the paste of an enamel, baking the two together.

The revival of national taste is noticeable not merely in this kind of work, but also in furniture, in the ornamentation of tissues, and in house decoration. Museums of all descriptions have been created in various parts of Russia; and, though much still remains to be done, there can be no doubt as to the thorough character of the present movement. It is also all the more powerful as it is in a very great measure due to private initiative. At Moscow, no less than 12,000*l*. was obtained by means of public subscription to establish a Museum of Art and Industry. This work was commenced in 1863, the museum was opened in 1868 under the direction of M. de Boutovsky, and it has continued to prosper and grow in wealth ever since. By the side of this museum we have also at Moscow the Strogonoff school, which was first organised in 1860. Here there are special classes to teach design, painting on cloth, printing on tissues, goldsmiths' and jewellers' and locksmiths' work, cabinet-making, and the ceramic art. Nor is this all; arrangements have been made to enable some of the pupils to work in factories during a part of the year, so that they may complete by practical experience their theoretical training.

The methods of teaching employed in Germany, France, and at South Kensington, have been carefully studied, and many points initiated. The policy inspiring these efforts is that of enabling Russia in every respect to provide for its own wants. The large tracts of land covered by the empire of the Czar, and their abundant yield of corn, render Russia independent of foreign countries for its food supply; and now it is seeking to attain the same degree of self-reliance with respect to all manufactured articles. The prospect is not a pleasing one for those who in England and elsewhere seek to trade with Russia. Their best opening so far has been due to the superior artistic merit of articles manufactured in the West; but now it will be seen the Russians are excelling in this respect also. According to many authorities, the Russian goldwork is considered superior to that of France or England; and the prohibitive duties imposed on foreign importations will compel many Russians to content themselves, in most other respects, with whatever degree of art home manufacturers may be able to display.

A PRACTICAL CO-OPERATIVE ASSOCIATION.

There are few of our readers, we suspect, who will not agree with the statement that it would be difficult to exactly determine the advantages which accrue from a strike. For one of these unhappy disagreements which may possibly have led to a slight improvement in the relations of master and men, how many result solely in loss to each? The strike of the Parisian cabinetmakers last year will doubtless be remembered by our readers. The importance and protracted character of the movement in a city of which the manufacture of furniture is one of the staple branches of industry, led to much suffering and inconvenience; and when, at length, a peace was patched up, it was found that the position,—the difficulties of which had caused the strike,—so far from having been improved, had only grown more desperate. As we remember pointing out in these pages, the great firms of the French capital, unable to obtain their goods from their own French sources, found no want of manufacturers abroad, especially in England and Belgium, only too ready to supply the Parisian markets. When the strike at home was at length terminated, the trade too late discovered that their old clients, having continued to be satisfied with the foreign goods supplied them during the strike, were in no way anxious to patronise their own countrymen. The position was, and still remains, an alarming one for the Faubourg St. Antoine, and a great many of the smaller firms have been unable to stand the strain.

Among certain of the workmen who went out on strike, the sense of the worthlessness of their triumphs has come home with sad force, as it is found what time has been lost, what debts were contracted, and how small, in fact, have been the results obtained in proportion to the efforts made. As usual among the men, previously to and during the strike, there were not wanting the active propagators of many most specious theories respecting that much-belaboured question of the relations of capital and labour. What matter if French industry were annihilated? asked these worthy cosmopolitans; a demand for labour in some other part of the world must be the only consequence! These apparently broad-minded ideas met with positive acceptance not alone among the men, but even in the very trades-committees.

The sufferers by the strike, however, had, as may be imagined, reasons not difficult to understand for wishing to see the differences brought to a rapid conclusion; they were little concerned with the solution of the serious political questions that certain of their number seemed more interested in studying than any other point. This more peaceable section of the men out on strike, unlike some of their brethren, were far from willing to sacrifice the interests of their country for the sake of a political doctrine, and from this group was formed at the close of the strike the co-operative association, the organisation and results of which we would wish to lay before our readers. During the strike the members of this association had particularly shown their activity and vigilance respecting the men's interests, but the strike concluded, they were the first to admit how far from satisfactory had been the settlement of the antagonism between the men and the masters.

The much-mooted question of emigration, it may be stated, received in Paris among the cabinetmakers a serious blow from the results of the report made by the delegation specially sent to the Philadelphia Exhibition with a view to inquiring into the condition and prospects of the trade in "the States." Hence it was determined that the wisest course was to remain at home. A meeting was held by the more active members of the group, the rough plan of a purely co-operative association was drawn up, the necessary capital, a very small sum (70,000 francs, 2,800*l*.) was borrowed, and in the face of the unsympathetic attitude of a large number of their brethren, the association was fairly launched.

The financial results of the first year of its existence, made known a few days since to the members, serves as an interesting proof of the success of the undertaking. The co-operative workshops,—in the Rue du Chemin-Vert, No. 106,—were opened on the 15th January, 1882, so that the results of a full year's work were made known to the assembled shareholders on the reading of the first annual balance-sheet, the net profits being declared, amidst much applause, at 6,707 francs 40 centimes (about 270*l*.). The sum, it will be seen, is small, but is none the less hard on 10 per cent. profit on the original capital of 2,800*l*., a fair return for a first year's experience.

The success of the undertaking may largely be set down to the admirable organisation of the association. Our neighbours, we have long freely admitted, are gifted with "the genius of organisation," and, indeed, it is a merit allowed them in the management of their whole governmental and financial system, even by their bitterest enemies. The organisation, however, of this special association of which we are treating, may be said to offer some peculiarities in its strict system of discipline. Entire control of the whole association was immediately lodged by the members in a committee, which in its turn appointed its director, and the foreman of the shop. The authority of these two over the men is as complete as it would be in any ordinary workshop; but, let it be observed as a characteristic detail, it is an authority which, very different from the usual, is tacitly admitted, and fully recognised by the men, not a murmur being raised against their self-elected chief. The Association has been fortunate in possessing among its members a number of first-rate workmen, many having been themselves masters, but having willingly sold their business to join the association. 140 shares, of 500 francs each (20*l*.),—5 francs on allotment, and 5 francs paid each month,—were subscribed by the members, no one being allowed by the statutes to hold more than one share.

The early months of the association were, as may be imagined, far from successful; it is the inevitable fate of most serious undertakings to meet with considerable difficulties at their outset: only ten men being employed in the shops, the other shareholders still continuing to work out of doors. At length, however, work was entrusted to the association, and when last year, as may be remembered, the French Government passed the Obligatory Education Act, and the city of Paris built a large number of temporary schools, the Association succeeded in obtaining a large contract. The workshops, from this moment, found ample occupation: forty men were actively employed, and the regulations fixing the working day at ten hours had to be changed, and the day extended to thirteen hours. With the close of last year, business to the amount of considerably over 5,000*l*. was being transacted. The Government School contract was not for a very high class of goods, it is true, but it kept the association afloat, and with the consciousness of their power to do better work, the members not only eagerly look forward to the next exhibition of decorative art to display their skill to the trade, but they already possess a show-room well supplied with creditable specimens of their work. Anxious in every way to meet with the approbation both of the trade and the manufacturers, the opinion of a committee of experts, composed of two of the members of their own shop and five outsiders, is taken whenever any doubt exists as to the value of a piece of work executed. A special committee looks into all the acts of the council of administration as also the organisation of the workshop. A curious passage of the report, read a few days back, consists of the complaint of the men of a want of severity on the part of their own foreman!

It seemed but reasonable that the secretary should congratulate the association on the results obtained. "Nine months ago we were nothing, and now we commence to have an horizon, restricted, it is true, but which will increase in extent if we only persevere in the direction which we have so far followed, the enfranchisement of our class by labour and by the united action of our wills and our intelligence."

It has been determined to institute a retiring fund for the members, to be formed by setting aside 25 per cent. of the yearly profits, 50 per cent. being devoted to the dividends paid to the shareholders, who, however, are only credited with the sum till their share is completely paid up; the remaining 25 per cent. constitutes the reserve fund. The expenses of the first outlay for tools, &c., will be entirely paid off by retaining annually 10 per cent. of the sum expended: hence in ten years' time the whole will have been paid for and yet the shop kept well abreast of current improvements. For this fact of the use of every aid which modern science gives the workman is one of the features of the new association. Time was when the aid of machinery was looked upon by the working classes with something more than mere suspicion; the fate of the first stocking loom, the story of how the *Times* was first printed by steam, are present to every one's memory. Now, however, these sentiments, the result of the want of knowledge, have fortunately died out. "In the present day," we quote from a recent report on the furniture trade, "the working classes have recovered from the first alarm, and not only accept the aid of machinery, but recognise its immense benefits not alone in the present, but especially in the near future; and if, instead of leaving the powerful aid of machinery in the hands of the masters, we, through co-operation, become possessed of its assistance, we shall soon see the day's labour reduced to the work necessary to supply the demand, and the leisure created by the improvement of the tools used in our trade will afford that bodily repose so necessary to the workman to procure those intellectual enjoyments of which he is in such need, and which are so full of charm."

This acknowledgment of the admitted benefits of machinery is,—as remarked, not long since, in quoting the above passage, our contemporary *Le Temps*,—an important step in the intellectual evolution of the working classes, which, by this very confession, implicitly submit to the discipline created by the employment of machinery; for where machinery is largely used a unity of direction is absolutely necessary, and a rigorous application to all employed of a series of well-considered workshop rules. Conformity to these principles has been the secret of the success of the humble association the organisation of which we have considered it might not be uninteresting to many of our readers to make known on this side of the Channel, where the unsatisfactory relations of capital and labour are scarcely less productive of suicidal disagreement than among our industrious neighbours.

AN OLD FLEET STREET TAVERN.

> "Foreigners remarked that the coffee-house was that which especially distinguished London from all other cities; that the coffee-house was the Londoner's home, and that those who wished to find a gentleman commonly asked, not whether he lived in Fleet-street or Chancery-lane, but whether he frequented the Grecian or the Rainbow."—MACAULAY.

AN ancient Fleet-street tavern, whose struggle for existence during the last two or three years would seem to have been a mockery of the past and an unavailing protest against the present, is about to share the oblivion which overtook Temple Bar,—the big yet younger brother as it were by whose side it stood so long for protection. The Bar and Child's old bank have alike disappeared. The houses between Bell-yard and Chancery-lane are pulled down; there is nothing save a much-derided statue to mark the boundary between London and Westminster; and now we learn that the City Commissioners resolve to sell the Cock Tavern by auction. Ben Jonson immortalises many of his chosen haunts; another laureate sings the praises of the Cock. But Tennyson's "Monologue" dwells not so much upon the tavern or its history, as upon the reflections it inspires in one who carries thither an uneasy yet desponding mind withal. The Cock claims to date from the days of King Charles I.; nor does its quaint old-world interior belie the tradition. The curtained boxes, the floor, the Jacobean fire-place, the clay pipes and screws of tobacco, even its pewter mugs and china trays, all tell of a bygone age, and of frequenters whose manners and mode of life were different from our own. The windows look upon a court which commemorates by name the "Apollo" at the Devil on the opposite side of the street. Over the entrance of the narrow passage which leads to the bar or "snuggery," stood the gilded effigy said to be the handiwork of Grinling Gibbons. In the bar is preserved a little box containing an old copper token, which bears the figure of a cock, and an inscription, "C. H. M. Att Temple Barr, 1655." The house itself escaped the ravages of the Great Fire, which consumed a part of the Temple, but stopped at the Temple Exchange Coffee-house, the first to be rebuilt after the conflagration. In the *Intelligencer* for 1665 (No. 51) appears an advertisement of the closing, during the Long Vacation, "of the Cock and Bottle, commonly called the Cock Alehouse at Temple Bar," with a notification that all persons having accounts with the master in farthings belonging to the house should repair thither before the 8th of July current to receive satisfaction for the same. Here, in a tavern which is mentioned in Defoe's "History of the Plague," we may picture to ourselves Pepys entertaining Mrs. Pierce and Mrs. Knipp at the lobster supper, when they drank, as he tells us, "and sang, and mightily merry." Both these ladies are frequently spoken of in the Diary: generally under circumstances of which Mrs. Pepys would probably not quite approve. The latter, indeed, was a married actress at the King's House, though very little is known of her beyond what is chronicled in Pepys's work. To the student of former times and former manners the annals of the Cock, and the many coffee taverns in its immediate neighbourhood are replete with interest. Whilst the fops and beaux thronged together at the Cocoa Tree, the Thatched House, and the St. James's, the republic of letters would assemble in the vicinity of Covent garden and Temple Bar; the learned professions and men of rank in all of these, as well as at Cornhill and about St. Paul's. At the first named no form of tobacco other than highly-scented snuff was tolerated for a moment; in the rest, smoking was universal and perpetual. Steele, in the first article of his *Tatler*, bids his readers to look under White's Chocolate House for all accounts of gallantry; for poetry under the title of Will's Coffee-house; for learning, under that of the Grecian; whilst to the St. James's they must turn for all news, foreign and domestic.

Of the clubs which met in these resorts the earliest was perhaps that held in the Apollo-room of the St. Dunstan's, or Old Devil Tavern, kept by Simon Wadloe,—Jonson's "old Sim the king of skinkers,"—next door to Child's bank. For this, as founded by himself, Jonson, with the rules of the Roman entertainments in view, drew up his *Leges Convivales*, twenty-four in number, beginning,—

1. Nemo asymbolus nisi umbra huc venito.
2. Idiota, insulus, tristis, turpis, abesto.

And from the fourth of which (Nec lectæ fœminæ repudiantor), it would appear, women of repute were admitted. Beneath his bust over the door were engraved on a black marble slab his lines,—

"Welcome all who lead or follow,
To the oracle of Apollo,—
Here he speaks out of his pottle,
Or the tripos, his tower bottle:
All his answers are divine,
Truth itself doth flow in wine," &c.

This tavern and the adjoining house were purchased in 1787 by Messrs. Child for 2,800*l*. They soon after pulled down the Devil, and Child's Place was erected on its site. In a print of 1774 the Apollo appears as a large and lofty room, furnished with a music-gallery. It was frequently used for balls and the like, and here Dr. Kenrick delivered his lectures upon Shakspeare. Multiplying under the Commonwealth, when at Puritan coffee-houses no oath was heard, and, in the words of Macaulay, lank-haired men discussed election and reprobation through their noses, the clubs acquired their more modern character in the days of Addison and Steele. In Dryden's time the wits gathered in the open coffee-room, but it is in the clubs of the *Tatler*, the *Lounger*, and the *Spectator* that we first meet with the closed doors, the regular membership and other features of to-day. Except wit, ladies, gallants, and good morals, there is nothing, says Leigh Hunt, that you hear more of in these writings than clubs, and he might have added the coffee-houses and taverns in which they collected. What is more exquisite, indeed, in its way than Steele's account of the *Spectator's* Club or of the Society at the Trumpet, among whom he has passed almost a sixth of his time "for these last forty years"? Of "the very insignificant fellow, but exceeding gracious," who maintains "an insolent benevolence to all whom he has to do with"?* So we have the Kit-Kat (Whig) and October (Tory country gentlemen and beer-drinkers), the Fringe Glove (a set of dandies); Estcourt's Beefsteak Club; Pope's Little or Short Club; the She-Romps, who once a month demolished a prude (which might have been due to Lady Mary Wortley Montague); Addison's Tall Club; Bishop Pearce's Silent Club; the Hebdomadal (a set of quid-nuncs); the Hum-drum and Mum Clubs, who ingeniously smoked and held their tongues; and, to descend lower in the social scale, the Choice Spirits, and the Harmonical Society, of which Goldsmith gives us so delightful a picture. Jonson's Apollo was differently constituted from that more refined concourse at the Mermaid, where he would encounter Shakspeare and Beaumont. Perhaps he there had things more to his own way, and could sit in his "throne of human felicity" more at ease with himself and with them who would flatter a vanity to which Jonson, as every one else, was no stranger. "I dined to-day," says Swift, in a letter to Stella, "with Dr. Garth and Mr. Addison at the Devil Tavern, near Temple Bar, and Garth treated." It is conceivable that Swift did not thoroughly enjoy his repast, for he was then beginning to feel awkward with his Whig friends, of whom Addison was one, whilst Garth had a few weeks before written in behalf of the fallen Godolphin a defence which their common acquaintance, Prior, himself once a Whig, had vehemently attacked in the *Examiner*. At the Devil Dr. Johnson presided over a supper party in honour of the publication of Mrs. Lennox's first book. The Rainbow, close by, is said to have been indicted in former times for the "nuisance" of selling coffee. Thus can we figure for ourselves who they were, and how they diverted one another, that frequented the famous taverns and coffee-houses beneath the shade of Temple Bar. And though the accustomed haunts gradually vanish from a scene upon which they once opened their doors so kindly, Will Honeycomb, Captain Sentry, or the Bencher who knew Jack Ogle, are to some no less real than they who crowd the street this day: still can one imagine that

"Supper and friends expect me at the Rose."

Electrical Experiments. — A series of experiments were made with the Elphinstone and Vincent dynamo machine, on the evening of Wednesday, February 21st, at Messrs. Unwin Brothers' printing-office, The Gresham Press, Little Bridge-street, Ludgate-hill, in the presence of a large company. The guests assembled in a large warehouse on the first floor, along the ceiling of which, and grouped together, were suspended 350 Swan incandescent lamps, each of 20-candle power. These were brilliantly illuminated, and produced a most dazzling effect. Lord Elphinstone explained that the machine was capable of driving 416 Swan lamps, but owing to delay only 350 could be set up. Among other experiments shown, a length of about 40 ft. of galvanised iron wire $\frac{1}{8}$-in. thick was rendered red hot. As the heat increased the zinc burnt off in brilliant coruscations, forming an electrical firework of great beauty; the heat still increasing reached whiteness, and finally the wire fused, parts of it as it struck the floor breaking up into brilliant globules of melted wrought iron. Lengths of steel, and also copper wire, each became in turn incandescent, the steel being fused. The current was then made to run through a coil of iron wire immersed in a glass vessel holding three quarts of water; instantly there was a hiss as when a red-hot poker is plunged into water. This was followed almost immediately by steam; in half a minute the water boiled, and before a minute had elapsed half the contents of the vessel was on the floor. An ordinary steel flat file 1 in. by $\frac{1}{4}$-in. was then placed instead of one of the carbons in an arc light, and the current being passed through, the end of the file was melted and consumed like a tallow candle in a fire, throwing off a shower of sparks with a Catherine-wheel-like effect.

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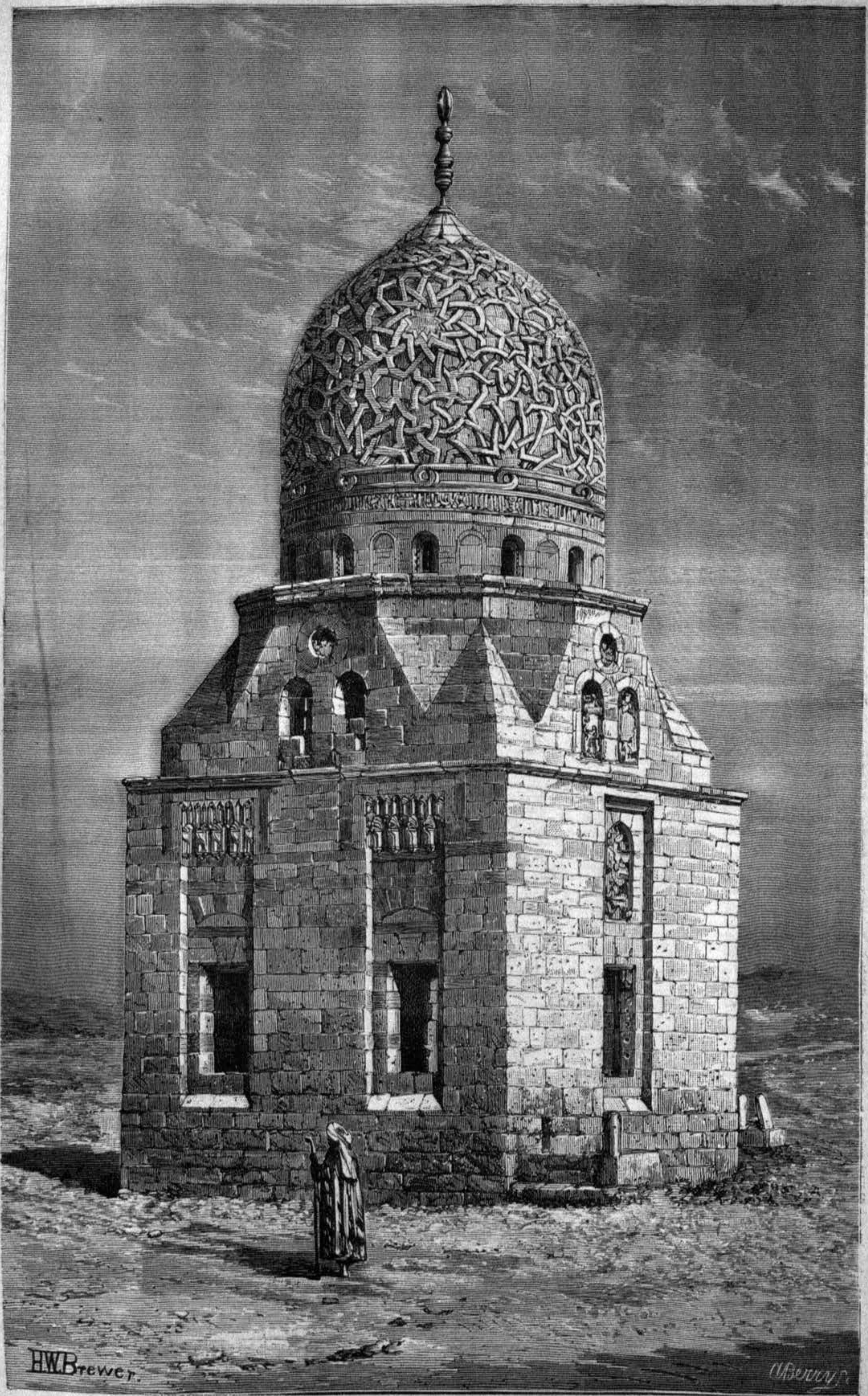
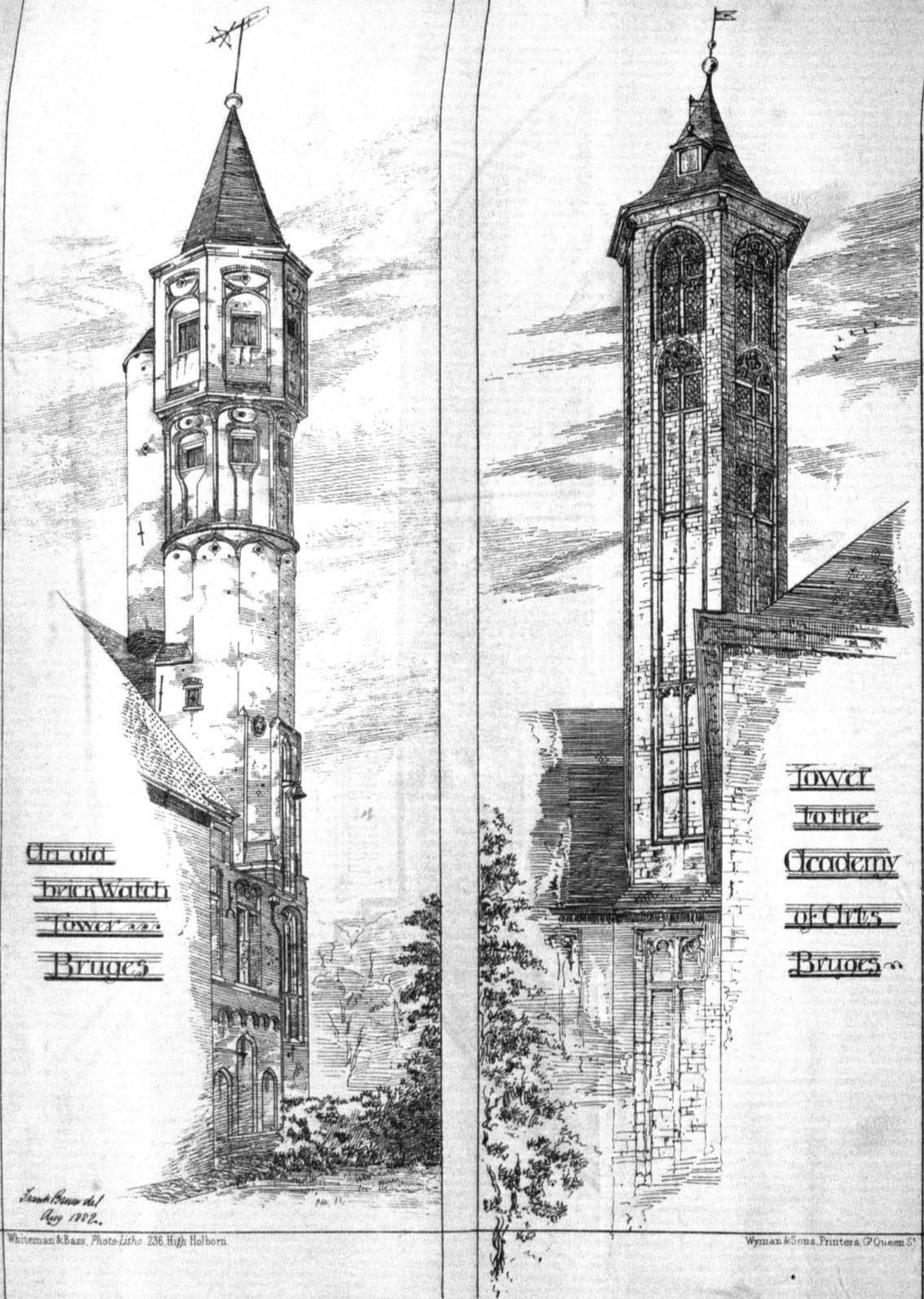
* See *Spectator*, No. 2, and the *Tatler*, Nos. 127 and 132. For an account of the Trumpet in Shire-lane see the *Builder*, vol. xliii., p. 774 (December 16th, 1882).



H.W. Brewer.
A. Berry Sc.

TOMB OUTSIDE CAIRO.



An old brick Watch Tower Bruges

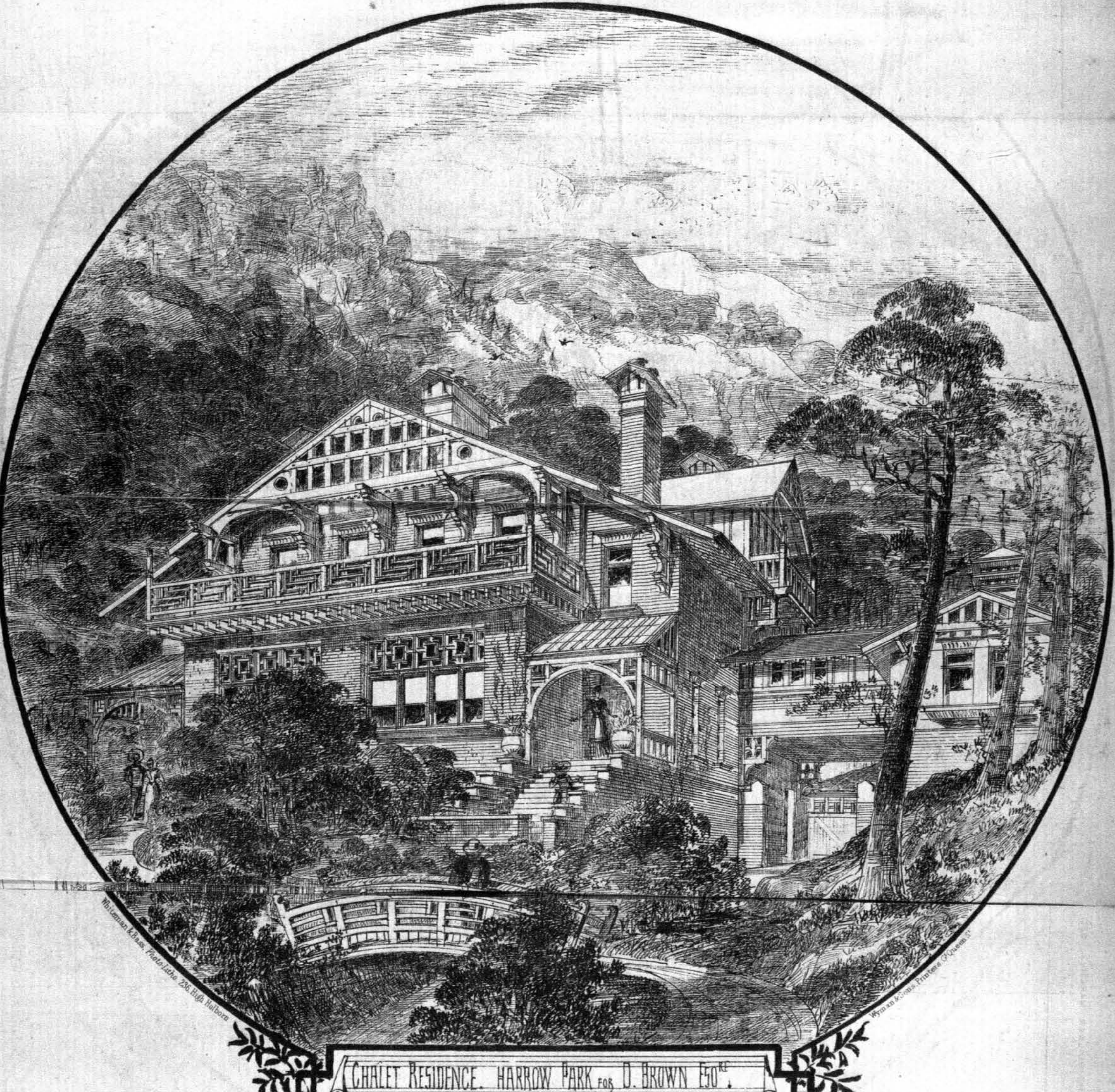
Tower to the Academy of Arts Bruges

Frank Brewer del
Aug 1882.

Whiteman & Bass, *Photo-Litho* 236, High Holborn

Wyman & Sons, Printers, Gt Queen St

BELGIAN TOWERS.



Whiteman & Bass, Photo-Litho, 236, High Holborn

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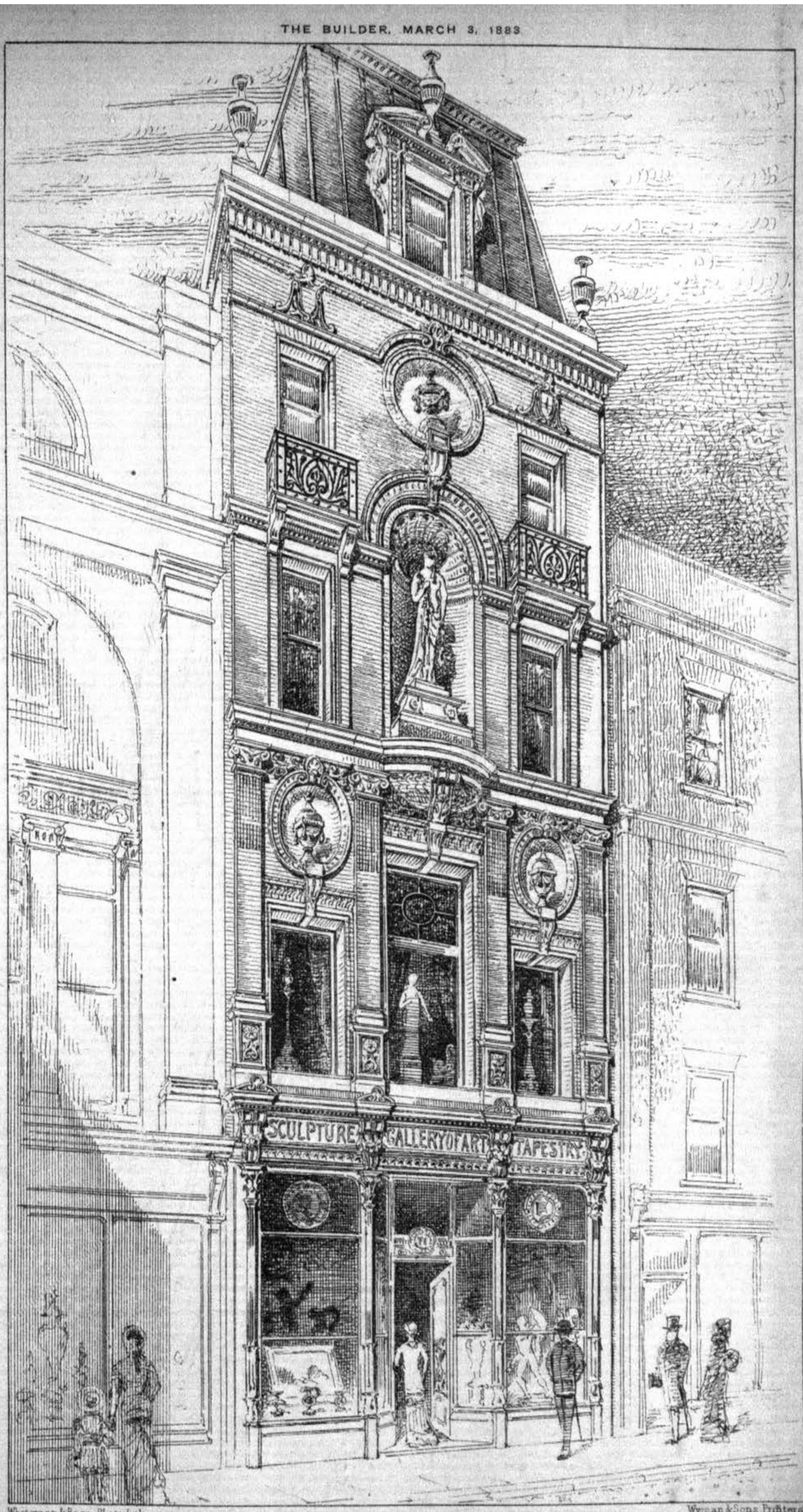
CHALET RESIDENCE. HARROW PARK FOR D. BROWN ESQ^{RE}.

J. T. WALFORD. ARCHITECT.
27 BUCKINGHAM PALACE ROAD. S.W.



Whiteman & Bass, Photo-Litho. Wyman & Sons, Printers.

A HOUSE IN THE STRAND.—Messrs. Archer & Green, Architects.